

# BRISBANE VALLEY FLYER

MAY- 2020



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

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A rarer Breed now, a Maxair Sport Drifter at Watts Bridge

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### From the Club



The club is still active but no material for inclusion in this issue has been received by the editor by the closing date for publication.

## **Anatomy of an Emergency Checklist**

By Rob Knight

*If the checklists that you use in your aeroplane work for you then please realise that I am not suggesting a change merely because of what you read here. The whole purpose of this piece is to provide a means to examine what a checklist contains, should contain, might contain, ensure that its order of tasks and actions is logical, and ensure its presentation is suited to the emergency to hand.*

*For the light single engined aeroplanes that I currently fly under VFR I use pneumatic checklists for single engined aeroplane operations, i.e. ones committed to memory. Thus I don't need to fumble through a series of printed lists to find the one relevant to my current emergency, nor squint through the small print on a laminated A4 sheet to find the one that I need. Committed to memory, I can instantly recall the checks and drills that are necessary for me to survive in any emergency I am facing at any point in time.*

*It's worthy of note that young men, many only in their late teens, flew very sophisticated fighters and bombers during WW2 with no reference to written checklists. If they didn't need them, why do we? Were they that much better than we are? I have never seen it written that a Lancaster bomber crashed because its pilot forgot his checks and drills.*

*In the here-and-now, the piece below relates the exercise that I went through when a very professional crop-dusting pilot, took me on as his mentee, and in the course of his mentoring, found many issues with the emergency procedures that I had adopted during my training up to CPL level. Initially there were just too many checklists and, in the event of a developing emergency, it might develop further whilst I was still deciding which checklist I should use. As he grim-faced told me, "There is no time to waste when there's silence at 50 feet".*

Learning to fly in the 1960s required memory work when it came to checklists. I recall my instructors began with the pre take-off otherwise known as the DVAs (Drill of Vital Actions before take-off). The second was the HASELL checks carried out prior to carrying out a stalling exercise. The third one taught was the checklist for the actions to be carried out on the downwind leg, before landing. As the training continued and my proficiency improved, I was given the first emergency checklist, that one for the dreaded EFATO (Engine Failure After Take-off). Before I did my first solo, all bar the HASELL check had to be committed to memory. This was not a problem and in due course I soloed and my training continued.

In due course, with a CPL still wet in my pocket I accepted a position as a loader driver with James Aviation and moved across to the hot seat in an FU24 Fletcher when a vacancy with my name arrived. My mentor was Dave, a 17000 hour topdressing (aka crop-dusting) pilot, and those were just the hours he had spent in the Fletcher, it didn't count his earlier flying in Tiger Moths, Austers, Cessnas 180s, and Beavers. His lined face and quiet manner bespoke of a proficiency that I could only hope to aspire to, especially in the hazard ridden world of Ag flying.

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One morning, sipping billy tea during a break period, Dave asked what emergency checks I would follow should I have an EFATO<sup>1</sup>. I told him exactly what I had been taught, and he went on to ask me what I would do if the engine failed at 1000 feet on a ferry flight so I gave him that checklist as well. I can still see him, fifty years ago this year, sitting in the fender of a loader with an enigmatic smile and crunching on a dunked gingernut asking me a fundamental question that I had never thought to ask.

“Why is the initial check you did immediately after you recognised the engine failure after take-off different to the one at 1000 feet?”

It stopped me dead. No-one had ever asked me to look at logic in a checklist. I just regurgitated what I had been taught by my previous instructors.

So, under Dave’s calculated mentoring, I revised my emergency checklists relating to engine failures from three to just a single one. The new one was in three parts, each with a specific purpose.

Part 1 was the immediate actions to take in the event of an engine failure anywhere.

Part 2 was the troubleshoot or attempted engine restart, and

Part 3 was the mayday and planned power off descent into a selected landing area.

Using this single checklist I did not need to consider the appropriateness of any one of a selection of lists. There was only one so no decision had to be made thus speeding up the emergency process.

**Immediate Actions** (after flying the aeroplane) as time permitted AND in chronological order

1. Stick forward (to maintain airspeed) and simultaneously in ag ops.tOPEN DUMP (to dump the load).
2. Where to land.
3. Fuel pump ON (where fitted, of course).
4. Change tanks (if operating on a selected tank).
5. Change combustion air source (either carb heat ON or alternate air, as it was in the fuel injected Fletcher).
6. Mags<sup>2</sup> ON BOTH.
7. Mixture RICH.

Notice that trim is not listed here – there are far more important things to check than wasting time adjusting trim at low level: trim is not a cause of engine failure. Also, this checklist is so small that in aeroplanes other than the lightest, the pilot should have it completed before it slows down to glide speed.

This checklist formed the immediate response to any engine failure regardless of position, height, or other circumstance. It was quick and covered the items that were most likely to cause an engine

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<sup>1</sup> Engine Failure after Take-Off.

<sup>2</sup>Synonymous with CDI.

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issue that might be dealt with by the pilot, even, possibly, in the restricted time available after an EFATO. The more height available, the more time there is to complete the checklist. Thus it is important to recognise the most likely causes of a failure and address them earliest.

In the event of an EFATO where there was no engine response, the only actions left to the pilot are to switch mags, fuel, and master switch, to OFF, close the throttle and land as near to straight ahead as possible. Naturally, the higher level at which the failure occurred, then the greater is usually the selection of potential landing sites.

If the engine responds, however, a new set of decisions must be made, and these are not part of any checklist. The pilot must decide if:

The restored power is sufficient to maintain flight, AND,  
How likely is the engine to continue providing that power.

With such limited time to make an assessment, only generalisations are pertinent.

Has full power been restored?

If the answer is YES, then the decision is easier, especially if over rough inhospitable terrain with improving terrain ahead. If NO, then the issue remains and a second stage comes into play.

Is the engine running smoothly or roughly?

A smooth running engine might indicate a partial power restoration so the choice of alighting areas may be increased. Only the pilot sitting in his hot seat can make that decision, whether to call it quits and put the aeroplane down, or to hold off for maybe a better crash site. He/she had better be right – their very neck may depend on it. But there is very little time to decide – perhaps a mere second or two, maybe even less. I'm all for putting the aircraft down unless the terrain is extremely inhospitable in an EFATO.

However, at altitude where time is available to carry out these checks and where no power has been restored, it's time to move on to the second memorised checklist.

### **Trouble shooting** (the likely cause of the failure).

1. Trim for the attitude giving the appropriate glide speed
2. Check carb heat ON (where fitted) as the longer before it is selected, the less heated air is available for ice reduction.
3. Check Mags on BOTH - check Mags L-R for individual operation. Maybe the switch "BOTH" position has failed and the engine will run on either Mag but not switched to that BOTH position.
4. Check Fuel pump IS ON
5. Assess fuel quantities available and, if an untried fuel source exists, turn to that supply.
6. Check the Mixture IS RICH.
7. Check engine temperatures and pressures as available. If one or more of these items indicates an issue, it's pretty academic as there is little a pilot can do to



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correct such issues. However, the details might be passed on in any future MAYDAY should be one issued.

If we can correct this issue, then, as stated previously the pilot makes the decision as to whether they use the power available to make an emergency landing in that vicinity easier to accomplish, do they continue on to their destination, or somewhere else of their choice.

However, if power is not restored, then the question of continuing does not arise – the pilot must glide the aeroplane into a selected field and make as safe a landing as possible in the circumstances.

At this point commences the last part of the drill, the 3rd part, which is to tell everyone (MAYDAY and brief passengers) and plan a powered off approach into a selected area.

### Advise and Plan

1. MAYDAY call. As VHF radio transmit range is very height (and terrain) dependant), it is timely to transmit a MAYDAY call before setting the aeroplane up for the safest possible conclusion to the flight.
2. Find the ground wind velocity to assist in making a headwind landing (if possible). Local smoke is helpful, as are wind lanes on water (on dams or lakes where visible, or ripples across crops. Cloud shadows indicate a general direction and speed only as they indicate the wind at their height, not at ground level.
3. Select the safest alighting area you can currently recognise considering size, slope, surface, approach, and surroundings.
4. Follow the procedure taught to set up a power-off approach and plan the flight path to achieve the appropriate height/position points in the descent. I use a two stage method. I select an area abeam the approach end of my selected landing area and aim to cross it at what I guess will be 1000 feet above that landing area. I fly to that area, and then I set up my approach.
5. Brief the passengers. Advise them of the now obvious failure and re-assure them. Tell them to tighten their harnesses. Indicate to them possible houses where first aid might be obtained or a telephone call made to Police and Ambulance.
6. Shut down the various systems – Mags OFF, Fuel pump OFF, Fuel OFF, Pitch to full fine (if in-flight variable pitch is fitted), MASTER switch OFF unless electric flaps are fitted. Ensure doors are unlocked.

From here on it is merely judgement. Aim to land with full flap (where fitted),  $\frac{1}{4}$  to  $\frac{1}{3}$ <sup>rd</sup> into the field. It is better to run through the far fence at taxi speed than hit the near fence at flying speed. Remember two things – the plane doesn't matter, lives do, sacrifice the aircraft if necessary to save the occupants, and in the event of an accident, remember that it's still people first and aeroplane afterwards. When all people are safe, secure the aeroplane and call the Police and the operator if the pilot is not the owner.

In summary, as depicted above, my engine failure checklist is in three parts, and it is the height/altitude at which the failure occurs that determines how far I get through the checklist before I start my flare.

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Only change what your current checklist lists unless you desire a change. Change for change's sake is not a reason. Use logic and intelligence to check the contents of your own emergency procedure and check any alterations with your CFI or other peer/mentor before making adaptations.

## Immediate Actions (in chronological order)

1. Stick forward (to maintain airspeed).
2. Where to land.
3. Fuel pump ON (where fitted, of course).
4. Change tanks (if operating on a selected tank).
5. Carb heat ON (where fitted).
6. Mags ON BOTH.
7. Mixture RICH.

## Trouble shooting (the likely cause of the failure).

1. Trim for the glide
2. Check carb heat ON (where fitted).
3. Check Mags on BOTH AND check Mags L-R.
4. Check Fuel pump IS ON
5. Check fuel quantities available and, if an untried fuel source exists, turn to that supply.
6. Check Mixture RICH.
7. Check engine temperatures and pressures

## Advise and Plan

1. MAYDAY call.
2. Find the ground wind velocity.
3. Select the landing area.
4. Follow the procedure taught to set up a power-off approach.
5. Brief the passengers.
6. Shut down the various systems – Mags OFF, Fuel pump OFF, Fuel OFF, Pitch to full fine (if in-flight variable pitch is fitted), MASTER switch OFF unless electric flaps are fitted. Ensure doors are unlocked.

**Just three short checks. What is hard or complex about THAT?**

Happy Flying

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## The Miraculous Mosquito

By Stephan Wilkinson



It could be argued that no airplane amassed as remarkable a combat record in so short a time as did the Mosquito.

Of the hundreds of types of aircraft that flew in World War II, every warbird enthusiast could come up with a list of the dozen most iconic. Spitfire, P-51, Zero, Stuka, Me-109, PBY, B-17, Corsair, Lancaster, B-29, Fw-190, Me-262...the candidates are nearly endless, and most lists would differ. But it's a fair bet that many would include the Timber Terror, the Loping Lumberyard, the Wooden Wonder: the de Havilland Mosquito.

It could be argued that no airplane amassed as remarkable a combat record in so short a time as did the Mosquito. It entered the war relatively late, a year to the day after the Battle of Britain ended, but it debuted with technology and aerodynamics far more advanced than the Spitfire's. Certainly no airplane flew as many different kinds of missions and performed them as well as the Mosquito, one of the world's first successful multirole combat aircraft. The Tornado strives to be its successor; the F-35 should be so lucky.

The Mosquito was an unarmed bomber with a crew of two, able to carry a bigger bombload farther than a B-17. It was also a fighter-bomber and a night fighter with an eight-gun nose battery. It was the most productive photoreconnaissance aircraft of the war. A high-speed courier. A weather-recon airplane. A carrier-qualified torpedo bomber (though too late to see combat). A pathfinder and target-marker for heavy bombers. The war's most effective extreme-low-altitude intruder. A multiengine trainer and a high-speed target tug. A decoy frequently used to convince the Luftwaffe that three or four spoof-raid Mosquitos dropping chaff were a bomber stream of Lancasters.

Many other airplanes did many of these missions, but none did them all. Mosquitos were built in 33 different variants during WWII and seven that were introduced *after* the war, at a time when everything else with a propeller was being shunted off to reserve and training units.

It seemed such a benighted concept at the time: a bomber with no guns. After all, this was the era of the Flying Fortress, of four-engine aluminium overcasts carrying tons of machine guns, ammunition, ammo cans and belts, complex turret units...and add in the weight of the gunners themselves, dressed in heavy heated gear, helmets and flak jackets, sucking oxygen from tanks that weighed substantial amounts. All this could add up to one-sixth of a heavy bomber's empty weight—three extra tons, in the case of a B-17. Plus the drag of blisters and turrets, gun barrels poking into the slipstream and wide-open waist windows.



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The de Havilland Mosquito was the anti-Fortress, a bomber proposed to the Royal Air Force with speed as its salvation, not guns. Many forget that the Mosquito turned out to be the first of its kind and the B-17 the last of its line. Never since have bombers truly been armed defensively. The B-29 had four remotely controlled turrets until Curtis LeMay stripped the guns from them, preferring to carry bombs and fuel rather than guns made pointless by air superiority. B-52s had a tail battery—quad .50s and then a 20mm rotary cannon—but in 1991 that station was eliminated. Neither the RAF's Canberra nor its V-bombers had a single gun. Neither did the F-117 stealth bomber, nor the B-1 and B-2. Since the day when the Mosquito went naked, guns on a bomber have been like tits on a boar.

De Havilland began design of the Mosquito on its own. Neither Geoffrey de Havilland nor his same-named son, who became the Mosquito's chief test pilot, had any interest in dealing with the government, for their company had thrived during the 1920s and '30s by concentrating on the civil market, where airplanes were bought because they got a job done, not because they met some blithering bureaucrat's specifications.

The senior de Havilland also had a champion: Air Marshal Sir Wilfred Freeman, who is often casually characterized as "a friend of de Havilland's." Which he certainly turned out to be, but the initial connection was that Freeman had commanded a squadron of de Havilland DH-4s during World War I and became a huge fan of that airplane. The DH-4 was one of the best single-engine bombers of the war—faster than many fighters—and remained in service with the U.S. Army Air Service as late as 1932. Freeman was confident that the de Havillands knew what they were talking about when it came to airplanes. He pushed hard enough in favour of the Mosquito that the airplane became known among its detractors as Freeman's Folly. Lord Beaverbrook, the Crown's aircraft production czar, three times ordered him to shut down early Mosquito manufacturing. Fortunately, Beaverbrook never put it into writing, so Freeman ignored him.

Still, it wasn't easy for de Havilland to convince the Air Ministry that an unarmed wooden bomber faster than any contemporary fighter was the answer to Bomber Command's needs. The obvious riposte to this too-neat theorization was that the enemy would inevitably develop faster fighters. The British could see what Germany had done in grand prix automobile racing and had no illusions about the country's technological prowess. This proved to be true to a degree when advanced versions of the Fw-190 and the nitrous oxide–boosted Me-410 became operational, and absolutely true when the Me-262 twin-engine jet flew. But nobody had anticipated the mid-1940s plateau of propeller effectiveness and compressibility problems that would limit conventional fighters to speeds roughly equivalent to the Mosquito's no matter how extreme their horsepower. The Mosquito was fast in 1940 and remained fast in 1945.

Nonetheless, the Mosquito's speed was a slightly exaggerated characteristic of the airplane. When the prototype flew in November 1940,



*The prototype Mosquito taken at the field behind Salisbury Hall (where it was designed and built) just before her maiden flight.*

it was certainly faster than contemporary frontline fighters, and for 2½ years after that first flight the Mosquito was the fastest operational aircraft in the world. But it should be remembered that no Mosquito ever went as fast (439 mph) as that slick lightweight did. By the time the Mosquito became operational, in September 1941, there were a number of faster singles being readied or already in service—the F4U Corsair, P-47 Thunderbolt, Hawker Typhoon and, more to the point, Focke Wulf Fw-190,

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which became a particularly potent Mosquito opponent. Some late-model 190s had as much as a 40-mph advantage over Mosquito bombers. Mosquitos relied as much upon altitude as they did pure speed to evade attack. If they were bounced from above, their saving grace lay in putting the nose down, manoeuvring and hoping there were clouds in which to hide.

Fortunately for the British, too few Me-262s were assigned to the air-superiority role, since Hitler wanted *Schnellbombers*. And for that, we can thank the Mosquito. When a single Mosquito flew a photorecon mission over Berlin in March 1943 and was fruitlessly chased by several Me-109s and Fw-190s, the *Führer* decided that, by God, he was going to have a fleet of superfast light bombers, and the 262 reluctantly accepted a role for which it was never intended.

Hermann Göring was another Mosquito fan. "In 1940 I could fly as far as Glasgow in most of my aircraft, but not now!" he famously said. "It makes me furious when I see the Mosquito. I turn green and yellow with envy. The British, who can afford aluminium better than we can, knock together a beautiful wooden aircraft that every piano factory over there is building. They have the geniuses and we have the nincompoops."

Berlin was a frequent Mosquito target, for the airplane had the range to reach it and the heft to carry at first four 500-pound bombs and later as much as a 2-ton blockbuster bomb, and to do it at 35,000 feet. One famous three-plane Mosquito raid on Berlin in January 1943 was precisely timed to arrive just as Göring began an 11 a.m. radio address celebrating the Nazi party's tenth anniversary. Sounds of confusion could be heard in the background as the broadcast was rescheduled for later in the day. At 4 that afternoon more Mosquitos arrived to again interrupt a radio speech, this time by Joseph Goebbels.

Though Mosquitos flew thousands of routine bombing missions, their most popular exploits were low-altitude, pinpoint hit-and-run raids, since the British media exploited them to the fullest. (The RAF smartly sent special camera planes along on some of the sorties to film the action.) With typical British understatement, they were called "nuisance raids." Nuisance indeed: a four-aircraft attack on Gestapo headquarters in Oslo; a raid on the prison in Amiens that blew the walls to free 258 French Resistance fighters; six Mosquitos bombing an art gallery in The Hague that was packed with Gestapo records; raids on Gestapo HQ in the centre of both Jutland and Copenhagen. (The press loved the fact that the Jutland raiders went in so low that one crew saw a Danish farmer in a field, saluting as they wailed by, and that during the Copenhagen raid the bombers literally flew down boulevards and banked into side streets.) Often the damage caused was light and collateral civilian losses were high—27 nuns and 87 children were killed in a Catholic school during the Copenhagen raid—but the effect on public morale was extreme. The Germans could run, but they couldn't hide. Nobody was safe from the Wooden Wonder.

And why, exactly, was it wooden? Certainly because spruce, birch plywood and Ecuadorean balsa weren't strategic materials and were in plentiful supply. Because furniture factories, cabinetmakers, luxury-auto coachbuilders and piano makers could quickly be turned into subcontractors. Because wood, particularly when covered with a thin layer of doped fabric, makes a remarkably smooth, drag-cheating surface free of rivets and seams. And battle damage could be repaired relatively easily in the field.

In April 1940, U.S. Army Air Forces General Hap Arnold brought to the U.S. a complete set of Mosquito blueprints, which were sent to five American aircraft manufacturers for comment. All were contemptuous of the British design, none more so than Beechcraft, which reported back, "This airplane has sacrificed serviceability, structural strength, ease of construction and flying characteristics in an attempt to use construction material that is not suitable for the manufacture of efficient airplanes." Beech couldn't have gotten it more wrong if they had tried.

Wood's chief advantage is that it's easy to work with and is a material that craftspeople have been shaping and hammering for millennia. It is sometimes assumed that a further benefit of wood was

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that it reduced a Mosquito's radar signature, but with the short-range Luftwaffe night-fighter radar in use during the war, that doesn't seem to have been a factor. A number of Mosquitos fell to He-219s and Me-410s in particular, perhaps because of the radar reflectivity of the big Merlin engines and their huge prop discs.

Wood is a composite, just as are the carbon/graphite-fiber materials used to make much of a Boeing 787 Dreamliner, and wood has the same qualities of strength, suppleness and light weight. Both wood and modern composites consist of tiny fibers suspended in a cellulose or polymer carrier—ingredients that by themselves have little strength but when combined create an extremely strong matrix.

Today composites are bonded under heat and pressure, but wood requires plain old gluing. Early Mosquitos were assembled using casein glues, which were exactly what you can buy today in any hardware store under the rubric "woodworker's glue." Casein glues are milk by-products (which is why the most common brand, Elmer's, has the familiar cattle-head logo), so they provide munchies for microorganisms, particularly when the environment is wet and warm, as was the case when the first Mosquitos were sent to Southeast Asia. In the Pacific theatre, some Mosquito glues turned cheesy, and upper wing skins de-bonded from the main spar.



*One of the places where the RAF's wooden Mosquito fighter bomber is made is at the Walter Lawrence & Sons joinery works in Sawbridge, Hertfordshire.*

The solution turned out to be two-part urea-formaldehyde glue, which de Havilland began using in the spring of 1943. The urea glue was applied to one wooden surface and the formaldehyde catalyst brushed onto the other. When the two were clamped together, in some places with the simple pressure of tiny brass brads, a waterproof bond stronger than the wood itself was formed.

Mosquitos were internally coated with traditional marine varnishes, not nearly as waterproof as modern polyurethane coatings. So there were cases of Mosquito structural failures caused by simple wood rot—some among de Havilland of Canada-built airplanes, which were sometimes found to suffer from poorer workmanship and lower quality-control standards. A few Mosquitos—a total of 212—were also built in Australia, but that country had even bigger problems, with only a tiny cadre of aviation engineers and technicians to depend upon. The first 50 Australian-built Mosquito wings were so badly glued they had to be rebuilt.

The Mosquito was not an easy airplane to fly. As combat aircraft historian Bill Sweetman wrote in his book *Mosquito*, it was "a slightly nervous thoroughbred which could perform impressive feats in the hands of the courageous and competent...but would occasionally deal out a kick or a bite." Its power-to-weight ratio and wing loading were both high, and its Vmc—the speed that needs to be maintained to assure rudder effectiveness with one engine feathered and the other running at full power—was, depending on load, an eye-watering 172 mph or more, probably the highest of any WWII twin. The much-maligned B-26 Marauder had a Vmc of about 160 mph.

There was a substantial no-man's-land between lift-off and Vmc during which an engine failure was usually fatal. Below Vmc, power had to quickly be retarded on the good engine to keep the airplane from rolling, and this meant a loaded Mosquito could no longer maintain altitude. (As cynics have said, the only reason to have two engines on a piston twin is so the good one can take you to the scene of the accident.) When their mounts were fully gassed up and carrying a 4,000-pound blockbuster, Mosquito pilots learned to ignore normal liftoff speed and instead keep the airplane on

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the runway no matter how long it was and pull up when they were just 200 yards or so from the end.



*The "Mossie" excelled in its role as a night fighter*

On takeoff, most multiengine airplanes exhibit little or none of the torque-roll/P-factor/slipstream-effect yaw of a powerful single, but a Mosquito's engines needed to be handled carefully. The effect on yaw of the long, powerful outthrust engines was substantial. Leading with the left engine and opening the throttles judiciously helped, but Mosquitos didn't have locking tailwheels to hold a heading during the first part of

the takeoff roll. So a pilot had to use differential braking to catch takeoff swings, and in typical Brit fashion, a Mosquito's pneumatic brakes were actuated by the rudder pedals but modulated by air pressure controlled via a bicycle-brake-like lever on the control column. Not a natural process.

RAF Mosquito pilots were typically selected for their airmanship and experience, and they handled their Mosquitos with elite talent. The USAAF tried to operate 40 Mosquitos designated F-8 photoreconnaissance and meteorological aircraft, but they crashed many of them, some on the pilots' very first Mosquito flights. (Granted, many of the crashes were due to mechanical problems.)

The F-8 program was a debacle, and in September 1944 it was cancelled. It had been championed by Lt. Col. Elliott Roosevelt, FDR's son, a low-time private pilot who had been forbidden to fly military aircraft. He trained as a navigator and loved the Mosquito because it let him fly as a crew member on missions over North Africa and the Mediterranean, which of course his unit's Spitfires and F-4s—photorecon P-38s—couldn't. Other Twelfth Air Force pilots weren't so sanguine, and they wrote that "the Mosquito with low- and medium-altitude engines is useless for our purposes. With the Merlin 61 engine its usability has yet to be proven."

Wright Field tested a Mosquito Mk. VII as part of the PR program and concluded it was "unstable in ascent at speed-of-best-climb. It was tail-heavy and unstable longitudinally during landing approach, especially with full fuselage tanks and centre of gravity located near the aft limit, and rather precarious for inexperienced pilots to land in this condition." The *Pilot's Flight Operating Instructions* warned: "This airplane is NOT designed for the same manoeuvres as a single-engine fighter, and care must be taken not to impose heavy stresses by coarse use of elevators in pulling out of dives or in turns at high speed. Intentional spinning is NOT permitted. At high speeds violent use and reversal of the rudder at large angles of yaw are to be avoided....Tail heaviness and reduction of elevator control when the flaps are lowered is VERY MARKED...."

The Mosquito required unusually light control forces, and they remained light at high speeds. Many other fast aircraft were self-limiting; their controls heaved up at speed and made it hard for a clumsy pilot to pull the wings or tail off. Not so the Mosquito.

There were three basic branches on the Mosquito tree: bombers, fighters and photoreconnaissance types. Each had many variants, such as radar-equipped night fighters and bombers modified to carry 2-ton blockbusters. The bombers and photo planes were unarmed, while most of the fighters carried four .303 machine guns in the nose and four 20mm cannons under the cockpit floor, their receivers and ammunition-feed mechanisms extending back into the bomb bay. Fighter Command insisted that its Mosquitos be equipped with sticks rather than bomber yokes, despite the fact that pilots swore the yokes made the aircraft more manoeuvrable. The fighters are also easily recognizable by



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their flat windscreens, suitable for gun-sights, rather than the bombers' more aerodynamic vee screens.

There were Sea Mosquitos, though only 50 were built and the mark didn't go into production until August 1946. Noted British test pilot Eric "Winkle" Brown did the original carrier-landing attempts, the first-ever multiengine aircraft carrier landings. Many were sure the shock of trapping would jerk the prototype Sea Mosquito's tail right off, but the fuselage had been suitably strengthened. A far bigger danger was getting the Mosquito slow enough to make a reasonable carrier approach, and Brown knew he was flying on the back side of the power curve. The Mosquito had a vicious power-on stall that quickly snapped into a spin. "If we got low and slow on the approach it was going to be a fatality," Brown later wrote, but he was able to hang the airplane on its props and get to the deck at just under 100 mph (a typical Mosquito approach was flown at 150 mph). As brave as Brown was, *Indefatigable's* landing signal officer might have been braver. Photos of the first landing show "Paddles" standing on the centerline of the carrier deck, just ahead of the arresting cables. It was the only way Brown could see the LSO's signals without their being obstructed by the left engine nacelle. Assumedly Paddles signaled "cut" and ran.

The biggest gun ever mounted in a Mosquito was a 57mm cannon called the Molins gun. It had a 25-round, rapid-fire ammunition feed designed and built by Molins, a formerly Cuban company that had become the world's largest manufacturer of cigarette-making and -packaging equipment. The 75mm gun mounted in hard-nose B-25G and H Mitchells was obviously larger, but it had to be manually reloaded by the bomber's navigator, so its rate of fire was about one-sixth that of the Molins gun. Many doubted that the Mosquito's structure could withstand the Molins' recoil, but de Havilland needed just one day—the time it took the factory to saw the nose off a crashed Mosquito, mount the 12-foot-long gun and test-fire it—to prove them wrong. The barrel recoiled 18 inches and hosed out a gout of flame 15 to 20 feet long, but the wooden airframe was flexible enough to dampen the shock.



*Folding wings and a torpedo fitted out the "Sea Mosquito"*

Mosquitos that carried the Molins were called "Tsetses," after the deadly African fly. Their specialty was sub-hunting in the Bay of Biscay. The bay was so shallow that the German subs had to dash across while surfaced, and Tsetses picked off enough of them that soon the subs could only travel at night. Tsetses also destroyed more than a few Luftwaffe aircraft, and the effect of a 57mm projectile on, say, a Ju-88 was devastating.

Another unusual weapon was the Highball, a Mosquito-size version of Barnes Wallis' famous Dambuster bouncing bomb. It was developed for use against *Tirpitz*, the German battleship hidden away in a Norwegian fjord. The Highball was to be spun up in flight—two were carried in the open bomb bay of each Mosquito—by power from a ram-air turbine, which must have been one of the first-ever uses of a RAT. Highballs would be dropped at very low altitude to bounce over the torpedo netting that protected *Tirpitz* and then crawl down the hull to explode well below the waterline.

Lancasters dropping 6-ton Tallboy bombs got to *Tirpitz* first, so the Highball airplanes and their weapons were sent to Australia to fly against the Japanese. Unfortunately, endless arguing about how the British carrier force should cooperate with the Americans who were running the Pacific War kept the Highballs hangared until war's end, and they were ultimately destroyed as "secret weapons."

## - Brisbane Valley Flyer -

The biggest postwar user of surplus Mosquitos was the Nationalist Chinese Air Force, which bought somewhere between 180 and 205 of them from Canada. But the Chinese pilots wrote them off at a rapid rate, ultimately destroying 60 of their Mosquitos. One was made into a nonflying taxi-trainer by locking the landing gear down and installing a network of bracing tubes between struts and fuselage, though the Chinese managed to crash even that one.

It's hard to tell how many Mosquitos the Israeli Air Force operated, since their procurement methods in the late 1940s and early '50s were so secretive, but they eventually may have had as many as 300. Those that flew operated mainly as photorecon aircraft, allowing the Israelis to snoop freely on their Arab neighbors. Despite the fact that the various Arab air forces were re-equipping with MiG-15s and the like, not a single IAF Mosquito was ever shot down, though repeated attempts were made to intercept them. The Mosquito's combat career ended during the Suez Crisis, in 1956.

Exactly 7,781 Mosquitos were built, the last one on November 15, 1950; 6,710 of them were delivered during WWII. The Mosquito outlived its supposed successor, the wood-and-aluminium de Havilland Hornet, by several months of RAF service. A new, larger, Merlin-powered Mosquito Series 2 airframe had been planned but never built, and the conceptualized "Super Mosquito" suffered the same fate. The Super Mosquito was to have been powered by 24-cylinder Napier Sabre engines, with a crew of three, an 8,000-pound bombload and an estimated maximum speed of 430 mph.

In 1951 the Mosquito was finally replaced by the English Electric Canberra, a gunless 580-mph jet that was designed to fly fast and high enough to evade all pursuers. Sound familiar?

----- ooOOoo -----

### Harry's Joke:

I was in the McDonalds drive-through this morning (getting food is allowed) when the young woman wearing oversized sunglasses behind me, driving a small VW Beetle (modern kind), tooted at me. From the look on her face and her digital gestures, she felt I was taking too long to order. I decided to pay for her food.

I moved up in the queue and she leaned out the window looking all crazy at me because the cashier staff told her that I had paid for her order. Perhaps she was embarrassed but her looks were hard to decipher.

When I got to the second window to get my food, I showed them both receipts and took her food as well. I had paid for it so it was mine to take.

Now she has to go back to the end of the beginning of the queue and start all over again. And it was all legit!

Had I spoken to her I could have said, "Don't mess with old guys; we can still turn a situation to our advantage".

Harry



## - Brisbane Valley Flyer -

### OBITUARY - Forest Hill Airfield

By Rob Knight

It's a sad goodbye to Forest Hill airfield. YFRH is no longer an ALA and is not available for ANY aircraft operations.

Having been a recognised airfield for light aircraft and the odd RAAF Caribou for the best part of forty years, the airfield was recently sold by Neville Woods, the owner, who operated a Beechcraft Bonanza from it to facilitate his other farming interests in Queensland.



*Forest Hill Airfield – YFRH Short finals 03 (upper right) had a spooky drop-off in front of the trees*

My first experience of the place was in 2011 when I used it to assist a friend, Peter Davies, who was coming to terms with his then newly acquired Lightwing GA-912. It was turning out to be a bit more spirited directionally than the Tecnam he had trained in. I felt that the tree-lined runway at YFRH would add encouragement to force a higher priority on his keeping straight and it worked a treat. But we also found that with a light easterly blowing, 03 also provided great thrills as one encountered the stop-start crosswind effect as one floated along beside the tooth-gapped tree line. However, the up-side was that, in attaining those thrills one also improved one's crosswind techniques – it was inevitable.



*Peter Davies Lightwing*

Runway 21 was easier in some ways – the broken tree-line along that eastern edge started further down the strip and one usually had the wheels on the ground by then. However, there were power lines to cross on short finals on 21. These formed a natural barrier to landing short of the threshold markers on this runway and, although no-one in my time actually came to grief with the lines, several pilots sat higher in their trousers after they landed than they did on base leg.

These lines could also trap anyone going around after landing long on 03. I watched a Cessna 172 from Archerfield trying for 03 once. He (or she) arrived over the trees on short finals for 03, a couple of notches of flap down, the airspeed too high and the pilot too slow. They managed a high-speed flare about half way down 03s 700 metre length and try to force it onto the ground. Wheelbarrowing with no braking as they passed the windsock, heading north, they made the decision that should have been made 500 metres earlier, and poured on full power. Too late, the power lines appeared, all set to catch the 172 like a butterfly in a net, and they yanked the stick back. They missed the lines: sailed over them semi-stalled, then sank out of sight, nose high, into the lower ground north of the

## - Brisbane Valley Flyer -

runway. That 172 must have been pretty light because in those available hundred feet or so, it was able to fly out of the stall and we saw it again in a gentle right hand climbing turn heading back to home base. I looked up the rego on the CASA website and advised his operator on what had happened but heard no more.

One of the worst characteristics of this field was the severe mechanical turbulence that could arise in its proximity at low level, even in relatively light west and south westerly winds. A surface wind of around 230 to-240 degrees at about 8 knots or higher seemed the worst, and several times I had to go around on 21 because even holding full aileron did not stop the roll. It was one of the worst low-level rotors I have experienced.



*Arthur flying his Sapphire*

The people that have frequented Forest Hill have also been a noteworthy lot. When I first rented a slot in the hangar in 2013, also present was Arthur Marcel who, at that time, was also the editor of this magazine. He based his Sapphire at the southern end of the hangar, beside Tony King's Fisher Koala.



*Tony King's Koala*

Beside my Colby, lived Cyril Brock's rather nice CAB Minicab. I had instructed in this type in New Zealand and they are an absolute delight to fly. In due course Tony sold the Koala to Will Fox in Melbourne and purchased the Minicab from Cyril.



*Roy Bartlett's T66 Nipper*

Another unique aircraft at Forest Hill in that era was Roy Bartlett's T66 Topsy Nipper. Built by Avions Fairy, it is a mid-winged light aircraft with a single seat and designed to be aerobatic.

In more recent years, Mal McKenzie parked his red and white Sky Ranger in front of my Colby, in the big hangar at YFRH. Immaculately built by Mal, his homebuilt was both very pleasant to fly and turned on a good cruise speed. I had many happy flights with Mal in this machine including a memorable one to Childers. Another frequent visitor over my time there has been my



*Mal McKenzie's Skyranger*



*Kev Walters for morning tea*

friend and colleague, Kevin Bloody Walter. On many memorable mornings we'd hear the 582 on his Drifter go quiet and we'd put the billy on for his morning cuppa. He'd taxi in, shut down and pat the dogs before saying, "What's up?"

Another likeable personality we shared the local airspace with was the late Peter Gesler. Peter was a Laidley businessman owning and operating the Bremer Stockfeeds Company. He lived near Warwick on his horse stud station, Greymare, and commuted daily in his Brumby 610 Evolution. Unfortunately, Peter tragically lost his life in an accident in the Brumby close to



*Peter Gesler landing his Brumby in better times*



## - Brisbane Valley Flyer -

Leigh Creek Airport in July 2019.



*Paul unloading his RotorWay, returning from Melbourne*

We had a couple of “fling wings” that we rubbed shoulder with, too. One was Paul Beutel’s RotorWay helicopter which shared my hangar until he sold it recently. Also throwing its wings around was Ivor Harper’s Autogyro MT-03 gyrocopter. It bunked with us for about a year before moving to Caboolture. He was parked in front of Arthur Marcel’s Sapphire’s old space which had been taken over by John Orr’s X-Air 582.



*Ivor's MT-03*

There were two hangars on the airfield: the larger one, where I was tenanted, and a slightly smaller one owned by a consortium from down south around Heck Field. This group, who called



*Forest Hill Flyers' rebuilt Drifter. Clive Ryan talking to pilot Clyde Howard after a Drifter sortie.*

themselves The Forest Hill Flyers, purchased the building from Trevor Meredith who had built it. Trevor, a close friend and associate of the previously mentioned Roy Bartlett of Nipper fame, owned a Jabiru for a period but appears to have withdrawn from aviation after he sold the hangar and his aircraft.

The group members included Clyde Howard, Ray Jones, Manfred Hitchens, and also the Late Ray Morgan who I mentioned earlier. They brought up the Genesis that I bought off them doing a deal with the Colby I had. Several months back Clyde flew their immaculate WB<sup>3</sup> Drifter from Boonah where they had restored it under the watchful eye of Nigel Arnot. Also in that hangar was the goup’s disassembled Shuttle, and the wings and fuselage

of Clive Ryan’s Sonex. He purchased it after it was written off in a landing mishap at Heck Field and is in the process of restoring it to flight.

The airfield had its share of wildlife – desirable and undesirable. There were lots of parrots and butcherbirds - we used to hand-feed the butcherbirds in the mornings outside our caravan. They became so knowing and selective they clearly indicated a preference for Devon flavoured luncheon sausage to Ham and Chicken. Maybe the chicken was a bit too close to home!

There were a few ‘roos, but many more snakes. I was sitting on the throne in our chemical toilet tent one evening when a brown snake about 6 inches long wriggled across my feet. While that was disconcerting, it was nothing to the trepidation I felt after Ivor Harper told me he’d seen a good-sized Eastern Brown in the hangar under a tarpaulin. In spite of gingerly executed searches, I never found it which is really the worst case scenario. The worst snake possible is the one you believe is there but you can’t find!

Perhaps the most serious problem for us aviators could have been the kites and wedge-tailed eagles that foraged around the field from time to time. We were



*The Colby – no match for an eagle*

<sup>3</sup> Wire braced.

## - Brisbane Valley Flyer -

acutely aware that they were eyeing up our dogs for dinner and that was probably their drawcard. However, in three years I had two near-misses with wedge-tails, both on short finals, one for each end of the runway. They were quite prepared to argue ownership of the airspace with me in the Colby until they got really close and then broke away and down. Others had issues with these birds, too. A Tecnam Echo clipped one, and I saw it spiral and crash into the trees off the end of 03. I never saw it fly away.

All-in-all, I found Forest Hill a very interesting place to fly from. In certain wind conditions it was very



*The Genesis – quire a rare bird, now*

challenging – on one occasion I had to go around three times in succession from short finals on 03 in the Genesis before I could finish the approach and actually land. In these cases the mechanical turbulence was almost bad there as I have encountered anywhere else.

In my time at the airfield we had three local accidents. Arthur Marcel lost his Sapphire in an EFATO due to a fuel issue whilst departing on 03. John Orr was another when he lost his X-Air's port

wheel during landing. This failure appears to have been caused by a manufacturing issue in the undercarriage leg.



Ray Morgan flying his Genesis



*John Orr and his X-Air*

The most serious accident led to the demise of good friend, Ray Morgan, who crashed his Slipstream Genesis soon after take-off from runway 03 in March 2018. This accident is still clouded in mystery – I have

yet to hear of a report being issued relating to its potential cause. I understand that, while the integrity of the aircraft was ascertained after the accident, no other details have been released at this time.

Our departure from this field is, indeed, the end of an era. Never again will engines be run-up, or roar as take-offs are commenced. No more gatherings of pilot owners having a cuppa and chewing the fat over how bad RA-Aus is, or how CASA knows more about aviaries than aviation. The environment at YFRH will now sink quietly into silence except for the occasional noise of the new owner's tractors as he works his market gardens.

YFRH – RIP. Many pilots will retain memories of you. Some good, some well .....

----- ooOOoo -----

## - Brisbane Valley Flyer -

### FLY-INS Looming

(Assuming current social distancing rules have been rescinded, of course).

19 July 2020	YWCK Warwick	Jumpers and Jazz Brekkie Fly-In
04 July 2021	YWSG Watts Bridge	Brisbane Air Show

### Mysterious Aircraft – Boulton Paul P71A



The P.71A was designed to meet a British airline requirement for a long range mail plane. Long and slim for its time, it was powered by two Armstrong Siddley Jaguar IVA Radial engines, each driving a two bladed propeller.

Only two aircraft were built, each delivered to Imperial Airways at Croydon Airport in February 1935. By the time of delivery, the airline had lost interest in using them as mail planes, so the two aircraft were converted as VIP transports with 13 removable seats.

It is noteworthy that Wikipedia states that this aircraft type was retired in 1936 depicting an incredibly short service life. History records little about its flying characteristics but both aircraft crashed over a span of just a few months suggest that it had handling and/or reliability issues. One crashed into the North Sea with the loss of all on board, the other crashed whilst landing at Brussels, in Belgium, and was deemed unrepairable.

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

1. In still air, a pilot carrying out a glide approach (nil power) at his best L/D TAS of 60 knots raises the nose attitude a little so the IAS settles and remains on 55 knots? What results from this
  - A. Increased L/D ratio, No change in the glide range, increased glide angle.
  - B. Reduced L/D ratio, reduced glide range, no change in the glide angle.
  - C. Increased L/D ratio, increased glide range, Increased glide angle
  - D. Reduced L/D ratio, reduced glide range, Increased glide angle
2. Which of the following options is the most correct?
  - A. The frontal area of the aeroplane causes form drag.
  - B. Skin friction is part of profile drag.
  - C. Total drag rises as the square of the Cd (drag coefficient)
  - D. A and B are correct.
3. A 6/8 cloud cover exists over a location. How would this be indicated on a weather forecast?
  - A. SCT.
  - B. FEW.
  - C. OVC.
  - D. BKN
4. A weather forecast for Albury contains the abbreviation NSW? What does this translate to?
  - A. New South Wales.
  - B. Non saturated wind.
  - C. Non substantiated weather conditions.
  - D. Nil Significant Weather.
5. In the event of an engine failure after take-off (EFATO), what is the pilot's most critical action
  - A. Turn around to land before too much height is lost
  - B. Push the stick forward to maintain airspeed.
  - C. Attempt an engine re-start.
  - D. Pull the stick back to convert excess airspeed into height.

See answers overleaf



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Answers: 1, D, 2, B, 3, D, 4, D, 5, B

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.

1. If the best Lift/Drag ratio (L/D) occurs at 60 knots then any change of airspeed from that value (for any given weight) will result in a reduced L/D ratio, and consequently a steeper angle of glide, reduced glide range and an increased angle. D is the only option that provides all three of these. Note that glide range is also dependant on W/V which is assumed to be nil for this question.
2. As the profile area changes so must the skin area so then must the skin friction as more skin is exposed to airflow
3. 1 to 2 OKTAS = FEW  
3 to 4 OKTAS = SCT (Scattered)  
5 to 7 OKTAS = BKN (Broken)  
8 OKTAS = OVC (Overcast)  
See forecast details as promulgated by the BOM Knowledge Centre at <http://www.bom.gov.au/aviation/knowledge-centre/>
4. D is correct. See <http://www.bom.gov.au/aviation/knowledge-centre/>
5. B is correct. In the climb the nose is high and airspeed will decay very rapidly. There will be a period of up to several seconds whilst the pilot catches up with the fact he/she has an issue, all the while the speed reduces.  
Unless the stick is pressed forward to maintain airspeed FIRST, there is little point in carrying out any of the other listed actions because the aeroplane will stall and after that all is in the sweet hands of fate.  
Summary –  
(I). STICK FORWARD to maintain airspeed and thus aeroplane and glide control  
(II). Sort out best available landing area.  
(III). Carry out whatever checks time allows.

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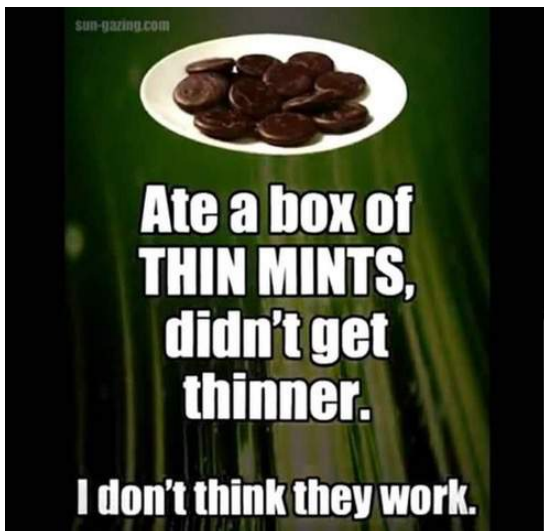
Sign in Laundromat:

When using these automatic washing machines, please remove all your clothes when the light goes out.

## - Brisbane Valley Flyer -

**I feel like I'm 16 again  
gas is cheap and I'm  
grounded.**

**So far, this is the oldest  
that I have ever been!**



**Some days I amaze  
myself.**

**Other days,  
I look for my  
phone while I'm  
holding it.**

### On Self isolation

Heard a Doctor on TV say to get through the boredom of self isolation we should finish things we've started and thus have more calm in our lives.

So I looked through the house to find all the things I've started but hadn't finished and so far I've finished off a bottle of Merlot, a bottle of Chardonnay, a bottle of Baileys, a bottle of wum, the remainder of Valiumun scriptuns, and a box of chocletz. Yu haf no idr how fablus I feel rite now. Sned this to all who need inner piss. An telum u luvum

## Aircraft Parts and Tools

Item	Condition	Price
VDO Volt Readout instrument	Brand New	\$70.00
Skystrobe Strobe light for Ultralight	NEW – IN BOX	\$75.00
Altimeter – non-sensitive with subscale in “Hg.	Brand new	\$50.00
Pipe bender (for 6, 8, & 10 mm tube)	Used but as new	\$40,00

### Headsets

AvCom headset. Functions perfectly	Excellent	\$160.00
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Contact Rob Knight at either [kni.rob@bigpond.com](mailto:kni.rob@bigpond.com), or call **0400 89 3632**.

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## Vehicles for Sale

### Ute-back Trailer

The rear end of a Ford Courier ute, covered with a Courier fibreglass canopy. Very robust, good tyres, complete with spare - on Land Rover wheel rims.

Tows very well: Excellent condition.

For quick sale - **\$2100.00 ono**



Contact Rob Knight - **0400 89 3632**

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**ON SALE**

## - Brisbane Valley Flyer -

### Closing Down Sale (All Ex Forest Hill Airfield)



Item		Sale Price
Air compressor, little use – looks like NEW	No image available	<b>\$120.00</b>
Rover Rancher ride-on mower Superb - runs great and is complete with new battery and manual.		<b>\$650.00 ono</b>
Caravan for sale - Franklin. 12 foot, 1978 model. Currently registered. Good condition for age. Contact Rob Knight for more images – <b><u>0400 89 3632</u></b>		<b>\$2500.00 ono sold registered, or \$1500 unregistered as is.</b>
Windsock. Museum piece/weather-beaten and ratty, but been there since it was erected.	<b>SOLD</b>	<b><del>\$20,000</del></b>
Push mower, single stoke, very limited use. Not ideal for a septuagenarian hence sale. Complete with catcher. Contact Rob Knight <b><u>0400 89 3632</u></b>		<b>\$40.00</b>
Digital Tachometer and hour meter. Activated by high tension lead to spark plug. Not connected to any power source, 2 in stock Contact Rob Knight <b><u>0400 89 3632</u></b>		<b>\$10.00</b>
Matika four stroke. Starts easily, runs well. Comes with catcher and mulching frame. Needs blades sharpened. Contact Rob Knight <b><u>0400 89 3632</u></b>		<b>\$120.00 ono</b>

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<p>Chain saw, 25cc Ozito. Short blade, automatic blade oiling.</p> <p>Very good condition. Once very useful, now very surplus to requirements. Completer with fuel bottle fuel can, and oil.</p> <p>Contact Rob Knight <b><u>0400 89 3632</u></b></p>		<p><b>\$70.00</b></p>
<p>Petrol Ryobi Weed Wacker. Runs well</p> <p>Contact Rob Knight <b><u>0400 89 3632</u></b></p>		<p><b>\$100.00 ono</b></p>
<p>Digital timer/hour meter.</p> <p>Acts and accumulates on operating vibration</p> <p>Contact Rob Knight <b><u>0400 89 3632</u></b></p>		<p><b>\$12.00</b></p>
<p>Ride-on-mower.</p> <p>Ranger, in use.</p> <p>Contact Ray Jones <b><u>0431 569 477</u></b></p>		<p><b>400.00</b></p>
<p>Generator</p> <p>Power King 5 KVA</p> <p>Contact Ray Jones <b><u>0431 569 477</u></b></p>		<p><b>\$450.00 ono</b></p>
<p>Fuel pump (hand operated)</p> <p>Armstrong type, manual lever action</p>		<p><b>\$50.00</b></p>



## - Brisbane Valley Flyer -

<p>Fuel pump (hand operated)</p> <p>Armstrong type, Manual winder, circulatory action</p> <p>Mounted on stacking trolley frame</p>		<p><b>\$50.00</b></p>
<p>Air compressor, 2 HP, used, but functions well</p>		<p><b>\$100.00</b></p>

### Engine Crane for Sale

Details:

Max lift 1000 KG

Folds to reduce storage space

Has had little use, as new condition.

**\$200.00**



Extended for use



Folded for storage

Contact Paul Beutel - **0407 554 331**

Message, voice call, or video call.

### GENTEX Helicopter Pilot Helmet for sale

Manufactured in the USA, this top of the range Gentex HGU56/P has a factory Lightspeed ANR /bluetooth conversion, twin visors (1 X dark, 1 X clear), a u174 plug, and a full comfort liner. Has had little use (3 flights only).

Delivered free anywhere in Australia.

**\$3250.00**

Contact Paul Beutel - **0407 554 331**






Message, voice call, or video call.










## - Brisbane Valley Flyer -

### General Sale

Item		Sale Price
<p>Suzuki s G16 motor, modified to lay over at 55 degrees to fit inside aircraft cowling. Includes overhauled, balanced, painted motor, new injector carby, starter, alternator, fuel pump, distributor, coil, stainless steel exhaust, and SPG-3 gearbox. Contact Colin Thorpe <b>0419 758125</b></p>		<p><b>\$5700.00</b></p>
<p><u>Microtech Engine Management System</u> Manage all engine parameters Data log in 3d Control timing, fuel, air-fuel ratios Set idle &amp; wide open throttle rpm Monitor system voltages Paid \$1300. Contact Colin Thorpe <b>0419 758125</b></p>		<p><b>\$750.00</b></p>
<p>Pioneer Ballistic parachute.  Includes explosive charge. For details and more illustrations -  contact Colin Thorpe <b>0419 758125</b></p>		<p><b>+850.00</b></p>
<p>Bullit ballistic parachute - Spring loaded.  For details and more illustrations  Contact Colin Thorpe <b>0419 758125</b></p>		<p><b>\$280.00</b></p>
<p>3 Blade black Ivo prop.  Ground adjustable, Dia. 1500mm  Contact Colin Thorpe <b>0419 758 125</b></p>		<p><b>\$450.00</b></p>

## - Brisbane Valley Flyer -

<p>3 Blade blue Ivo prop.</p> <p>Ground adjustable, Dia. 1540mm</p> <p>Contact Colin Thorpe <b>0419 758 125</b></p>		<p><b>\$300.00</b></p>
<p>NEW - Cummins finished aluminium spinner, polished with shaped cut-outs</p> <p>Suit 3 blade prop, Dia. 243mm x 300mm high 101.4mm pcd mounting holes</p> <p>Contact Colin Thorpe <b>0419 758 125</b></p>		<p><b>\$480.00</b></p>
<p>USED - Fibreglass spinner to suit 3 blade prop</p> <p>Dia. 215mm x 290mm high, 101.4mm pcd mounting hole.</p> <p>Contact Colin Thorpe <b>0419 758 125</b></p>		<p><b>\$80.00</b></p>
<p>Koger folding canopy sunshade</p> <p>Contact Colin Thorpe <b>0419 758 125</b></p>		<p><b>\$170.00</b></p>
<p>K&amp;N cone air filters, washable</p> <p>Brand new. 42 mm (1.65") mouth.</p> <p>Two of.</p> <p>Contact Rob Knight <b>0400 89 3632</b></p>		<p><b>\$15.00 each or \$20.00 for both</b></p>

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Aircraft for sale  
¾ scale replica Spitfire

**\$60,000**



Powered by a 6 cylinder engine, this delightful aircraft has good performance and low hours. Available for immediate delivery.

It comes with a low flight time, excellent handling qualities, superb charisma, a brand new mechanical fuel pump and two jack stands.

For details contact Bill Watson. Tel., **0447 186 336**

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### 95-10 Shuttle Mk2 for Sale.

Not registered, and dismantled for storage. Jabiru 1600 powered. Basic instruments & radio.

Sweet flying aircraft. Make a **CAN'T REFUSE.**

Ph. **0488 422 156** (Clyde

**SOLD**

eanout-**MAKE AN OFFER WE**

