SPORTPILOT

RECREATIONAL AVIATION AUSTRALIA / OCTOBER 2015 VOL 50 [10]

OCTOBER IS

NATIONAL SAFETY MONTH

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✖ JABIRU ADVICE FROM THE USA ✖ 3D PRINTERS IN AVIATION ✖ ALL IN A SPIN ABOUT SPINS


Gorgeous weather at AUSFLY. Photo: Brian Bigg

ON THE COVER

"One in five of the parked aircraft had numbers on the tail"

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STAMPILS PUBLISHING
All Enquiries 1300 838 416
7/1 Grandview St, East Ballina
NSW 2478

EDITOR
Brian Bigg
editor@sportpilot.net.au

ADVERTISING SALES
admin@stampils.com.au

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EXTRAS

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Email RA-Aus headquarters at admin@raa.asn.au.

HEAD OFFICE
PO Box 1265 Fyshwick
ACT 2609 Australia
Unit 3, 1 Pirie Street
Fyshwick ACT 2609
international:
+61 (2) 6280 4700
national: (02) 6280 4700
fax: +61 (2) 6280 4775
Email: admin@raa.asn.au
www.raa.asn.au

ENQUIRIES
Memberships:
members@raa.asn.au
Members Market:
membersmarket@raa.asn.au
ARBN 070 931 645
ABN 40 070 931 645

NATIONAL FINANCE AND ADMINISTRATION MANAGER
Maxine Milera
admin@raa.asn.au

CEO
Michael Linke
ceo@raa.asn.au

NATIONAL OPERATIONS MANAGER
Jill Bailey
ops@raa.asn.au
0400 280 087

ASSISTANT OPERATIONS MANAGER
Neil Schaefer
ops@raa.asn.au
0428 282 870

NATIONAL TECHNICAL MANAGER
Darren Barnfield
techmgr@raa.asn.au
0417 942 977

ASSISTANT TECHNICAL MANAGER
Jared Smith
jared.smith@raa.asn.au
0418 125 393

NATIONAL SAFETY, RISK AND COMPLIANCE MANAGER
Katie Jenkins
safety@raa.asn.au
0418 445 652

RA-AUS BOARD ELECTED STATE REPRESENTATIVES

TASMANIA
Eugene Reid
0428 824 700
tas1@raa.asn.au

NEW SOUTH WALES
Don Ramsay
0418 257 793

Michael Apps
0412 435 198
nsw2@raa.asn.au

Michael Monck (President)
0419 244 794
nsw3@raa.asn.au

NORTHERN TERRITORY
Mark Christie
0412 345 111
nt@raa.asn.au

SOUTH AUSTRALIA
Barry Windle
0408 842 308

NORTH QUEENSLAND
Ross Millard
0422 119 051
nqld@raa.asn.au

SOUTH QUEENSLAND
Trevor Bange
0429 378 370
sqld1@raa.asn.au

Mike Smith
0418 735 785
sqld@raa.asn.au

Tony King (Secretary)
0400 226 275
sqld2@raa.asn.au

VICTORIA
Rod Birrell
(03) 9744 1305
vic1@raa.asn.au

Teresa Avila
0410 410 185

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Normalisation of deviance

BY MICHAEL MONCK

LATELY there's been a lot of talk about safety. These conversations have carried over to this column, as well as among our staff. Our Ops Team, Jill and Neil, mentioned a phenomenon to me the other week called 'Normalisation of Deviance'. I first read about this effect some years ago in relation to the culture at NASA, which is where the phrase originated.

On the morning of January 28, 1986 the Challenger space shuttle sat ready for launch at Cape Canaveral. At 11:38 it lifted off from the pad and 73 seconds later exploded 16kms above Florida.

By the end of the day one of the world's most efficient information markets, the New York Stock Exchange, was pointing the finger at Thiokol, the company which made the solid fuel rocket boosters. Its stock fell 12 per cent in a matter of hours. The belief that Thiokol was at fault was vindicated some months later when the engineering analysis identified the cause of the explosion to be O-rings supplied by the company. Somehow the stock market, with little information or technical knowhow, had immediately identified the culprits even before the wreckage had been salvaged.

Just as interesting were the events which took place before the accident.

On previous missions, the performance degradation of the O-rings had been identified. It had even been noted the degradation would be worse in cold weather. Despite this, no action was taken to repair or replace the affected components. The accident was clearly foreseeable.

Jumping ahead almost 20 years, NASA faced another tragedy. On February 1, 2003, the space shuttle Columbia returned to earth after 16 days in orbit. As it re-entered the atmosphere, the shuttle commander pitched the nose up in the usual way, so the heat generated from atmospheric friction would concentrate on heat resistant ceramic tiles attached to the underside of the craft. The procedure was a standard one, but in this instance there was a key difference.

When the shuttle had launched two weeks earlier, one of the tiles had been damaged. As a result, the integrity of the entire heat shield was sufficiently compromised that when the intense heat built up, the internal structure of the left wing was destroyed and the shuttle broke up. As with the Challenger disaster, the Columbia's crew was killed.

And like the Challenger, the problems which caused the Columbia disaster were known before the flight even left the ground.

These tragedies occurred because of differing technical issues, but both were traced to the same human trait – normalisation of deviance.

The O-rings were known to be a risk and heat tiles had been damaged on previous flights. Never before though, had anything gone wrong to the extent that lives were lost.

The engineers had designed the equipment in such a way that it could withstand the stresses of launch, extended periods in the harsh environment of space and the superhot re-entry. It was only after earlier shuttles had returned safely that the components were discovered to have been compromised. But the engineers could see the faulty components hadn't caused problems, so they began to adjust their expectations and revise their requirements. They had designed the component and, when it was demonstrated that it didn't matter if the component deviated from the specification, they accepted the compromised specification as the new normal.

The problem with the new normal is that it doesn't take into account all the risk factors originally considered. A brand new O-ring, for example, could withstand lower temperatures and a degraded O-ring could operate perfectly well under normal temperatures. Combine the two situations, however - degradation and colder temperatures - and they had catastrophe in their future. The new normal is not the same as the regular normal.

At the time of the shuttle crashes we weren't aware of the dangers associated with the normalisation of deviance. Today we should know better.

We are trained to fly circuits at 1,000ft. Hours and hours at the same height, so our minds get used to the visual picture and our bodies to the actions needed to achieve our goals at that altitude.

So when we first fly a circuit at 500ft, it seems thrilling. Do it a second time at 500ft, though, and it seems less thrilling. A third time even less so. By the time we've done it a dozen times 500ft seems normal to our minds and bodies even though it's really 500ft below the true normal.

Now drop another 200ft. This is really seat-of-the-pants-stuff and the first time has the blood pumping. The second still thrilling, but less so. And so it goes. Before you know it, 300ft feels normal. Along this path we can easily find ourselves doing low circuits and feeling there is nothing wrong with it. I've done it a million times before so why should this time be any different? The problem is that, like the NASA engineers, the new normal doesn't consider all the risks considered the first time.

When the pioneers decided 1,000ft was a safe height for circuits they took into account such dangers as power lines, turbulence, the effect of land contours on wind, conflicting slow traffic and the possibility of an engine failure. That's why we fly at 1,000ft. To minimise the risks.

So next time you think about flying a low circuit or doing a beat up, ask yourself – have I honestly considered the risks or have I just dismissed them because I got away with it before and expect to get away with it again? You may have just normalised the deviation.

CALENDAR OF EVENTS

RECREATIONAL AVIATION AUSTRALIA

A. 10 OCTOBER
RA-AUS 2015 ANNUAL GENERAL MEETING

The meeting will begin at 2.00pm at the Brothers Club, 130 Takalvan Street, Bundaberg. Following the AGM, members can take part in open discussions with the board and CEO. At 4.00pm discussions will be held about the draft constitution. For more information www.raa.asn.au.

B. 12-14 OCTOBER
RA-AUS CFI CONFERENCE

Brothers Sports Club, 130 Takalvan St, Bundaberg, QLD. An important forum for all CFI's. Register with admin@raa.asn.au or contact head office for more information.

C. 10 OCTOBER
NHILL AIR SHOW

World War 2 aircraft, vintage cars and model aircraft will be on display. For more information, www.nhillairshow.com.au.

E. 24 OCTOBER
PORT MACQUARIE FLY-IN AND FLY & SPY

Hastings District Flying Club will put on a weekend of aviation fun and fellowship. On Saturday aircrew can participate in the Fly & Spy fun observation trial which involves teams answering questions as they fly a set course in the local area and does not involve difficult navigation. Food and drink will be available throughout the day for those who prefer to just soak up the local atmosphere. A welcome / presentation dinner in the clubhouse Saturday night. For more information, Rod Davison at roddi194@yahoo.com.au, 0419 632 477 or www.hdfc.com.au.

D. 23-25 OCTOBER
RATHMINES SPLASHDOWN & CATALINA FESTIVAL

Guest speakers will address marine parks, waterways access, and maintenance and corrosion tips. HARS demonstrations. For more information www.seaplanes.org.au and www.rathminescatalinafestival.com.

F. 7 NOVEMBER
TOCUMWAL SHOW AND SHINE

Owners of the new Tocumwal Residential Airpark and the Murray Border Flying Club will put on lunch for flyers who come visit for the day. Very informal but fun day. For more information, info@mbfctoc.com.au or Owen Peake 0409 950 085.

G. 5-6 MARCH 2016
AEROFEST

Busselton Aero Club in WA. Big family day with everything aviation, skydiving, food and drink. Saturday evening BBQ. Busselton Regional Airport is the gateway to the Margaret River wine region. For more information, Ken Manton 0429 967 172 or ken.manton@bigpond.com.

H. 13 MARCH 2016
CLIFTON FLY-IN

This has become an iconic event in the region and is the premier attraction for all types of aviation in southern Queensland. See various types, shapes, sizes and models of recreational, ultralight and homebuilt aircraft. Come late pm Saturday for BBQ and drinks. Fly or drive in, see ERSA. On-field camping, bring your swag. Advise for catering. For more information Trevor Bange 0429 378 370, (07) 4695 8541 or trevorbange@bigpond.com.

AN ISSUU APP

I'm wondering if you might be able to nudge ISSUU to release their windows app in the Australian windows store.

Now I've got windows 10 on my work tablet/laptop, I would like to be able to take advantage of it to read the magazine, but it seems the app is only available on the U.S. Store.

Googling 'ISSUU windows app' brings up a link to the Microsoft store, but it throws an error on install which seems to be linked to not being in the U.S.

A bit of googling suggested it was a similar case with the Apple app last year. I'll ask them as a user, but I'm thinking you might have more luck as a publisher.

DAN SCHUBERT

***FROM THE ED** / We shall ask and let you know how we go.*

HOW MANY HOURS?

I write in response to '20 hours before solo' comments ('How many hours?' *Sport Pilot* July 2015).

In October 1945, the end of World War II resulted in my demobilisation from the Royal Australian Air Force. At the time I was completing training as a navigator/bombardier as a crew member in a B-24 Liberator. Subsequently, in 1947 I learned to fly on an income equivalent in today's currency of $3 a week against the hire of ADH 82 Tiger Moth of $15.25 an hour.

In October 1951 I was awarded my commercial licence and flying instructor's rating. Thus in October this year I celebrate 65 years as an instructor of flying.

Many of the students I have taught over the years would have tail dragger and full spin recovery endorsements and achieved their first solo with between seven and 10 hours of dual instruction. Have instructors forgotten that each time a student flies an aircraft accompanied by an instructor, the student is paying for that person as well? Those of us who have known the pleasure and wonder of flying should appreciate there are others with a similar ambition. Do not spoil their dreams by making the possible economically impossible by mandating a minimum of 20 hours dual instruction before the first solo. Are we in danger of underrating our instructors and students if we do?

AUBREY COOTE

PISTON GONE

The AUF used to have a perpetual trophy like the CAGIT called Pis'ton Broke. Would anyone know its whereabouts?

According to the June 2003 edition of Australian Ultralights magazine, it was at a private strip at Moonta, SA. Minimum distance to claim was 130nm. Wonder where it is currently?

C'mon guys and gals. Let's find it!

ROGER HALL

POLISHED PUBLICATION

Just put my vote in the mail and will keenly watch the coming period to see the outcome of an exciting reform agenda implementation. I am a new member and was pleasantly surprised to find an included sub to a quality magazine. I have no problem with the digital copy but have subscribed to the paper copy because I read it commuting on the bus. I think it's a polished professional publication. If I was not of this opinion, I would want the option to not receive the magazine and pay less because this would be in line with other bodies of which I am a member.

In fact I have requested some to stop sending me minutes/newsletters/agendas in the hope it saves money - particularly if the same information is available online or via email.

CAMERON LANGFORD

MOUSE CLICKS

If members are forced to accept an electronic copy of *Sport Pilot* magazine without extra cost, it would be nice to have it done properly. Having just finished reading the latest edition, the following could be considered to make the electronic version more user-friendly:

1. Improve the resolution – at the present, don't bother zooming in on an aircraft to get a better look – the closer you get, the blurrier the picture.
2. Do something about cross-page photos – with the electronic version, the only way you can see the entire two page photo is to print out both pages – hardly acceptable.
3. Mouse-clicks for enlargement of the photo (this would cancel out suggestion 2 above) but also provide an easy way to see more without zooming in.
4. Mouse-clicks for connection direct to websites, particularly for advertisements.
5. Mouse-clicks on photos of aircraft for sale for connection to websites for more photos provided by the seller, or email details supplied for the request of same.

The thought has occurred to me that given the printed copy of the magazine has a dollar value, perhaps the members should have been given the opportunity to vote on the new concept – I for one would have voted NO.

DAVE TONKS

***FROM THE ED** / Most of those things are on the higher quality ISSUU version. Your suggestion 5 is a good one. Will pass on to RA-Aus to see if something like that can be done for Members' Market.*

CLEAR MIND
CLEAR PROP

WRITE IN: EDITOR@SPORTPILOT.NET.AU

The state of the organisation is reflected in the Letters to the Editor columns. The more letters – the healthier the organisation. So don't just sit there – get involved. Your contributions are always welcome, even if no one else agrees with your opinion. The Editor makes every effort to run all letters, even if the queue gets long at certain times of the year. (By the way – the Editor reserves the right to edit Letters to the Editor to shorten them to fit the space available, to improve the clarity of the letter or to prevent libel. The opinions and views expressed in the Letters to the Editor are those of the individual writer and neither RA-Aus or *Sport Pilot* magazine endorses or supports the views expressed within them).

NEW HOME ONLINE

AS part of our ongoing work to improve how we deliver digital *Sport Pilot* to members, we have moved to a new home on ISSUU.

If you have saved *Sport Pilot* on ISSUU as a favourite, or created a stack, you will need to re-do that at the new address, which is http://issuu.com/raaus.

Digital *Sport Pilot* can also be accessed from the RA-Aus website as well as the Facebook page at

https://www.facebook.com/RecAviation/app_123743911011091.

We are also progressively adding back issues of *Sport Pilot* as part of the digitisation project. By the time you get this edition, you should be able to read every back issue of *Sport Pilot* on the website.

BOARD ELECTION RESULTS

NSW

Don Ramsay 284 votes
Barry Wrenford 95 votes
Informal 4 votes
Total number of votes in NSW 383

SA

Jim McDowell 85 votes
Barry Windle 112 votes
Informal 2 votes
Total number of votes in SA 199

Invalid votes 29
Total number of all votes 611

THE CALENDAR IS BACK!

BY MICHAEL LINKE CEO

SUBSCRIBERS to the printed edition of *Sport Pilot* will be pleased to learn that the popular RA-Aus yearly calendar is back.

The calendar full of aircraft pictures will be delivered free to subscribers with the December edition of *Sport Pilot*.

If you aren't a subscriber by December 1 you'll miss out this year.

Don't forget for a limited time you still receive six free editions of the magazine with every 12 or 24 month subscription.

For members, simply log into your account on the website and follow the prompts. Non-members can download a form or call the office.

The digital copy of *Sport Pilot* is on the ISSUU website. Subscribe to that for free. There is also a low res version on the website if your internet access is stuck in the dial up age.

Sport Pilot remains the voice of Recreational Aviation Australia and the best magazine in the sport aviation sector.

Now with the free Calendar, its better value than ever.

AVSAFETY SEMINAR IN AYR

BY STEVE MCGUIRE

THE Jabiru hangar at YAYR was the venue for a seminar on CASA's Avsafety program in August.

It was delivered by CASA safety advisor, Tim Penny, to an attentive audience of about 30 mostly RA-Aus pilots and students, including a number of retired CPLs and GA pilots who have converted to RA-Aus.

Several members of the audience had flown in as the ceiling lifted, just in time for the 9.30 start.

Tim focussed on four main issues: VFR flight into VMC, unauthorised low flying, operations around uncontrolled aerodromes and maintenance releases, which was of more concern to the GA operators. Audience participation was high and most people appreciated the opportunity to be able to speak informally with a CASA representative about a number of issues, including the ongoing Jabiru issue.

Smoko was laid on and, after the session, a sausage sizzle was cooked up by hangar master, Rupe Kefford.

DRUG ARREST

A QUEENSLAND man was among four men arrested over an alleged interstate criminal network in early September. The incident drew national media attention.

A 67 year old member of the Gold Coast Sports Flying Club at Heck Field was arrested when he landed his Sting at Deniliquin in Southern NSW. Police say they found inside the aircraft 45kgs of cannabis and four kilograms of an ice precursor drug. The man was later charged with supplying a commercial quantity of a prohibited drug and has been refused bail.

As part of the same operation, three other men, all from Hay in New South Wales, were charged with supplying guns. Police say a tip off led them to the arrests.

They also raided the man's home, post office box and his hangar at the flying club, much to the shock of other members.

Photos: NSW Police

NEW DESIGN FROM RUTAN

LEGENDARY aircraft designer, Burt Rutan, has released details of a new airplane he is building in his garage.

He calls it the SkiGull, a two seat tandem aircraft capable of landing on water, snow and unimproved surfaces. Rutan recently unveiled the first images of the aircraft at AirVenture in Oshkosh. He said he had planned to fly the prototype to the show, but it wasn't ready in time.

The aircraft will have foldable wings and be transportable without a trailer.

According to Rutan, the SkiGull will have an auxiliary lithium-ion electrical propulsion system, to provide additional power during take-off, for engine-out safety and for docking and beaching in high winds.

A US company called AntennaFILMS is making a documentary about the development of the SkiGull. It's been raising money in Kickstarter to fund the project. For more information, https://www.kickstarter.com/projects/antennafilms/looking-up-way-up-the-burt-rutan-story.

JABIRU IN PERSPECTIVE

BY BRIAN BIGG

AMID all the controversy and arguments about the CASA restrictions on Jabiru powered aircraft this year, one small fact keeps getting mentioned but overlooked.

The same engines being operated in the US have not had anywhere near the same level of problems – in fact, Jabiru power is considered to be among the safest form of propulsion for American light aircraft owners. How can that be? The engines come out of the same factory.

Katie Bosman Krotje of Jabiru USA, the North American distributor, thinks she knows why.

"The vast majority of Jabiru-powered aircraft in the US use digital engine monitoring for all cylinders," says Katie. "If there is a problem with cooling baffles or carby tuning, a complete electronic engine monitor makes it easy to spot and correct before damage occurs.

"Most certificated Jabiru aircraft in Australia, including many in flight schools, were built with only single-cylinder CHT/EGT monitoring, and sometimes no EGT monitoring at all. This makes it difficult for pilots to detect issues such as uneven EGT spread, excessively lean mixtures, cylinder head overheating during taxi and hard climb, and detonation. Lack of EGT instrumentation also makes proper tuning of the Bing carburetor impossible.

"The Jabiru engine was designed to be light-weight and still put out a respectable amount of horsepower. It was never intended to be a heavy chunk of iron which could take a lot of abuse. Jabiru has published strict limits for EGT and CHT in different phases of operation, and our experience has proven the engines to be very reliable when these limits are respected. However, without proper engine instrumentation, it's impossible for a pilot to know when the limits are exceeded.

"Over the years when speaking with Australians and South Africans unhappy with their Jabiru engines, it has always involved aircraft with incomplete or non-existent CHT/EGT monitoring. Jabiru USA recommends everyone who purchases an engine or firewall-forward kit, to use electronic engine monitoring for all cylinders for easier setup and troubleshooting, as well as monitoring of daily operations.

Katie is also keen to put Jabiru's problems into a larger perspective.

"Compared to mainstream certificated aircraft engines such as Lycoming and Continental, Jabiru is a young company. It's had engines in production for just 22 years.

"If you take a look at the first 22 years of the engine considered the worlds' most reliable, the Lycoming O-320, it might surprise you (See Sidebar).

"The issues which have affected Jabiru are comparable to the failures experienced by Lycoming all those years ago. It could even be argued Lycoming's worst issues were more severe, with manufacturing flaws leading to connecting rod failures and piston pin and oil pump flaws affecting many models. A cursory glance over the history of other certificated engines reveals similar failure records.

"It makes one really wonder why Jabiru is being singled out when it is clearly not alone," says Katie.

In the meantime, the limitations remain in force, other than the one change made in July.

Previously the requirement was that a pilot-in-command of a Jabiru-powered aircraft could only carry a passenger if he or she had signed a waiver not more than 28 days before a flight. That was amended to permit statements to be signed not more than three calendar months before the flight. This applies even if the passenger is a Pilot Certificate holder.

IN THE NEWS

THE FIRST 22 YEARS OF LYCOMING'S O-320

(Information from the FAA website. List excludes Service Bulletins and Service Instructions)

1953 O-320 series introduced.
1963 7/16" Diameter exhaust valve failure- Inspect and, if necessary, replace exhaust valves. Depending on aircraft usage and time in service, inspection/replacement recurs every 300 to 500 hours.
1964 Engine oil could be drained overboard as a result of oil seal failure in AC light weight fuel pumps. Pump modification required within 25 hours.
1965 Crankshaft flange cracks, loss of propeller. RPM restriction during certain maneuvres (when equipped with certain Hartzell props on Piper PA-30 aircraft).
1966 Connecting rod failures- To prevent further failures of connecting rod assemblies, replace specified connecting rod assemblies prior to accumulation of 250 hours time in service.
1966 Oil filter adapter gasket failure. Replace gasket with new part number within 50 hours.
1967 Superior Flow oil filter failures resulting in loss of oil and severe engine damage. Replace with different filter elements.
1969 Marvel-Schebler carburetor inspection and cleaning to prevent possible power loss due to blockage of carburetor metering passages by thread lubricant or other foreign material.
1973 Piston pin failure – To prevent piston pin failures resulting from grinding cracks which occurred during manufacture. Affects large range of Lycoming engines of all sizes.
1975 Oil pump failures- Inspect, replace and assemble the oil pump drive shaft and drive impeller. Large-scale AD affecting many Lycoming engines.

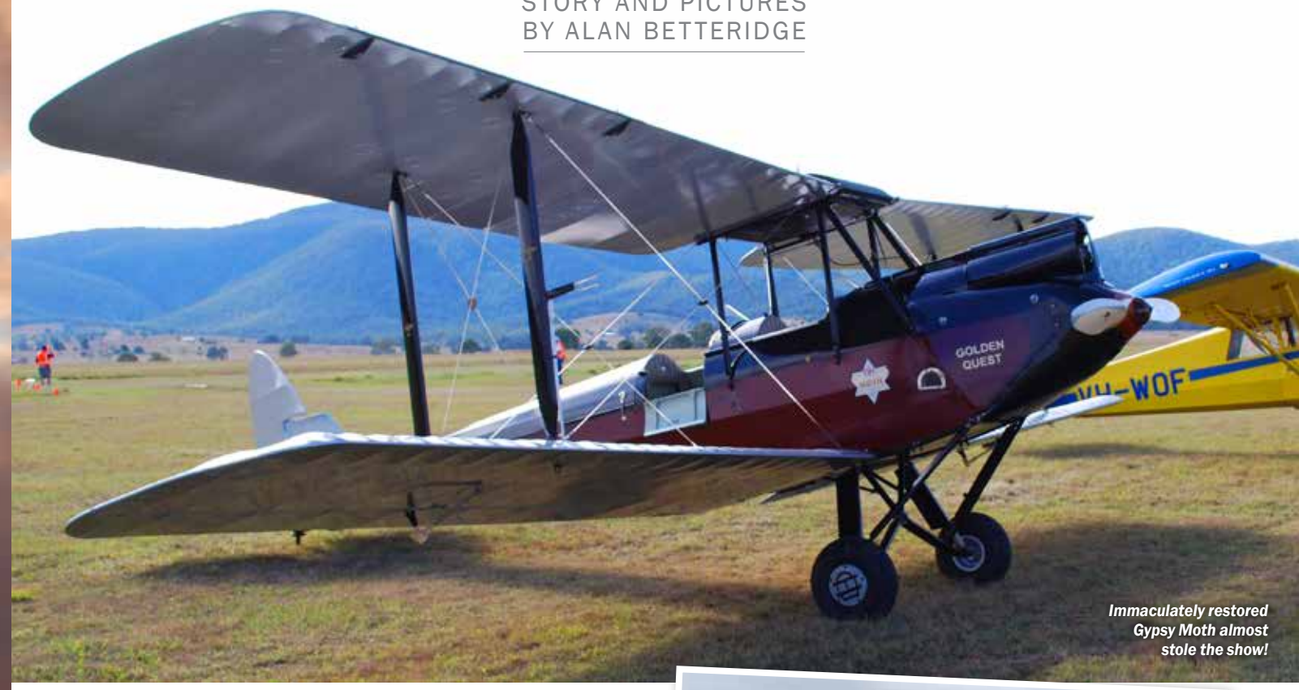
THE FIRST 22 YEARS OF JABIRU

(Information from jabiru.net.au and casa.gov.au). Note that in 22 years, only one failure has been deemed critical enough to warrant an Airworthiness Directive.

1993 First Jabiru engine, the 60hp 1600, approved by Australian CAA.
2006 Flywheel Attachment- Early 80hp 2200 engines used ¼" cap screws to retain the flywheel to the crankshaft. Several failures prompted a change to 5/16" cap screws. After a single failure of the larger screws on a 3300, this SB was revised in 2012 to ensure the regular inspection of flywheel attach hardware. Later engine upgrades include addition of close-tolerance dowels and a flywheel reinforcement plate. Failures were attributed to fatigue caused by poor propeller security or uneven pitch setting (causing adverse crankshaft vibrations) and sudden stoppage due to prop strike.
2007 Cowl modifications to J160 aircraft (2200 engines) for better engine cooling in hot weather conditions.
2008 Cowl modifications to J230 aircraft (3300 engines) for better engine cooling in hot weather.
2011 First issue of the Service Bulletin regarding through-bolt failures and hardware upgrade, followed shortly by increase in diameter of production through-bolts. Another issued in January 2015, revised the through-bolt and stud replacement intervals and hardware upgrades for engines with the smaller through-bolts when used in flight training.
2012 Replace defective-design Type A piston pin retainer circlips on affected engines or on engines rebuilt using the Type A circlips. Type A circlips are susceptible to deformation during installation and can 'migrate', causing catastrophic engine damage.
2012 Valve spring washer adverse wear. Two incidents were reported where a valve jammed in its collar, causing the washer to wear, leading to failure and engine stoppage. The service letter details modification to existing normal inspection procedures and extra precautions for operation in dusty conditions.
2014 Propeller flange attachment- Directs maintainer to correct procedure in the Engine Overhaul Manual for propeller flange attachment. Several cases of flange bolt failure and propeller separation have been reported and attributed to installers not following the correct installation procedure.
2014 Abnormal distributor cap wear due to use of certain rotors- SB details inspection procedure.
2014 Cylinder head inspection- Procedures for inspecting condition of heads and valves to reduce instances of sticking or broken valves. Inspection intervals are determined by usage and operating conditions of each individual aircraft.

Watts Bridge Shines

STORY AND PICTURES
BY ALAN BETTERIDGE



Immaculately restored Gypsy Moth almost stole the show!

ORGANISERS of this year's 'Gathering of Eagles' fly-in at Watts Bridge airfield near Toogoolwah (Qld) had a few nervous days leading up to the event because rain had been forecast; and nothing spoils a fly-in more than inclement weather.

But they needn't have worried beacuse of the weather Gods smiled favourably and the rain held off – at least until the Saturday afternoon and had cleared the area by Sunday morning.

The event is the biggest on the Watts Bridge calendar and, as a result, many people put in a lot of time and effort to ensure it ran smoothly.

This year the focus was on the 100th anniversary of Gallipoli and, to this end, many people dressed in military uniforms of both WW I and II.

Visitors were met at the gate by a very official looking member of the Africa Corp 'Sgt' Mike Krause, a man who had an uncanny resemblance to Sgt Schultz of Hogan's Heroes fame, making sure no one was carrying any contraband in the form of eskies.

Sgt Krause threatened to confiscate them but in the end he relented and let visitors keep them anyway.

By 8am aircraft started arriving en-masse and the sky came alive to the sound of recreational and general aviation in all its glory.

Many aircraft stood out from the crowd but none so more than Bill Finlen's immaculately rebuilt Gypsy Moth.

Bill said the rebuild had been a labour of love.

"This aircraft was imported into Australia by a mining company in 1929 and was used to help them search for the fabled Lasseter's reef," Bill said.

"This was the reason they named it 'Golden Quest' in respect to its duties with the company."

As history shows, the famed reef of gold was never found but to this day, people still look for it in the hope of striking it rich.

Bill said the aircraft had an accident in the early thirties and, after being rebuilt, was sold to someone in New Zealand. Bill obtained the aircraft in about 2010 and started the arduous task of rebuilding it.

Largest aircraft at the show was this Grumman Mallard from Evans Head

A good looking Savannah gets ready to commit aviation

The end result is a tribute to his skill and dedication in bringing back to life a part of Australia's aviation history.

"There are only about three Gypsy Moths in Australia (all in South East Qld) and about eight left in the world.

"So this aircraft is quite unique," he said.

Ross Rossow checks out his dream machine – a replica Spitfire

Bruce Clarke's replica Sopwith Camel

Visitors were welcomed by Mike Krause of the 'Winds of War' Military History Group

Simply impressive – this Yak-3U-R2000 Reno Racer had heads craned skywards when it flew in

Peter Freeman and his pride and joy a Light Wing GR912S

Glennis Rossow made the trip up from Stanthorpe for the weekend's event

The Gathering of Eagles has always had a reputation for attracting unusual aircraft and this year was no exception.

A Grumman Mallard amphibian flew up from Evens Head (NSW) and really made an impressive sight when it arrived overhead.

The sound of its twin radial engines could be heard long before it could be seen and had many people trying to guess what was coming! Another spectacular arrival was in the form of a Yak-3U-R2000 Reno Racer, one of the fastest radial engine aircraft around. This aircraft (VH-YOV) holds the speed record for a set course of well over 400MPH and to see it do a fly past is something many people will never forget.

A very smart looking L200D was in attendance and had people talking about the unusual cabin shape and the unmistakable twin tail layout.

The aircraft was built by the Czechoslovak Automobile and Aircraft Company in 1965 and first appeared on the Australian register in 2013.

There were a large number of RA-Aus registered aircraft in attendance (as usual) and the talk of the field was clearly the handling of the Jabiru Issue by CASA.

While many thought the safety authority had been heavy handed, others agreed that some action had been required. Frank Jensen, a Jabiru owner, said he thought CASA should have taken into consideration the number of Jabiru aircraft flying and then found out how many of those had experienced engine problems and how many had, in fact, completed all of the AD notices.

"I have never had an issue with either of my aircraft and I believe it's because I have always made sure everything was up to date," Frank said.

"I know in the past there were engine issues and most of these have been well and truly overcome."

> "many people put in a lot of time and effort to ensure it ran smoothly"

Frank said the idea of getting passengers to sign a waiver was a pointless exercise.

"My wife and I have flown all over Australia without so much as a hiccup and now I'm expected to get her to sign a waiver before she flies with me. How ridiculous is that?"

Taking a different viewpoint was Jabiru owner, Vern Howard.

"I think by what CASA has done has brought the engine issues out into the open and made people more aware of what needs to be done," Vern said.

"If more people take the time to ensure all ADs are completed, the fewer engine related problems there will be and surely that can only be a good thing?" he said.

Whatever the view taken it is obvious that the issue and CASA's handling of it was the talk of the Gathering and will be the talk of the recreational community for some time yet.

Hindsight is 20-20

BY ANONYMOUS

HERE is a story about my disregard for a problem I did not consider a major issue - until it became one.

It was a beautiful morning, the type we all love to find ourselves enjoying at our home airfield. I was looking forward to some local flying and a couple of circuits. There was no cloud, some wind - about 10 to 12kts straight on the nose for the western runway.

Everything was looking good and onto the pre-flight inspection I went. Having a mechanical background, I am pretty thorough with all critical components such as linkages, hinges, fuel mix etc. The trusty 503 engine has been exceptionally reliable and why would this change? On previous inspections, I had noticed a small black oil stain developing between the front cylinder base and the crankcase. Not an issue I thought, normal for a two stroke. No doubt just the base gasket weeping slightly. As the engine was coming up to its top end overhaul anyway, I knew I would change it then.

Then I got to the fun bit. Pre-take off checks were good, the engine was warm and traffic was clear so I lined up and rolled into the sky. The climb out was normal - about 600fpm – I was quickly up to about 2,000ft AGL, then powered back and headed off to the mountains in the north west in a slow climb. About 10 minutes into the journey, the engine missed a beat or two and then recovered. So did my heart. A quick look around for possible landing areas was not encouraging but I did however know of an overgrown disused ag strip probably within gliding range. I thought to myself 'Bugger!' For years I had planned to drive out to that ag strip to inspect it for just such an emergency landing, but had not done so. Bugger!

My next thoughts were 'full power and climb' to try to get back to the home airfield. The wind was behind me now and that was good. The engine sounded different but it was still working, that was also good. About three minutes later the engine backfired and lost about 60% power.

Now my sphincter was pulsating as fast as my heart. My emergency landing training was now going to have to work, because I was not able to maintain altitude and began slowly descending. I made the calls for an emergency landing and was relieved by a reply from a local pilot who was taxying to the runway for take-off.

My engine was still working but only on one cylinder. The precious moments passed. Then I could see the airfield, but could I make it there? It still looked possible as long as the engine retained some power. The wind was perhaps stronger too, because my groundspeed appeared high. It all meant a straight-in approach and a pretty high speed downwind landing. I would be more than happy to deal with that as long as I could make the runway, because I would only get one shot at it. There is a reasonably steep valley at the western end of the airfield with no landing options, so I would have to decide before then if I was going to make an outfield landing. Getting closer and still looking good, I received a slight updraft from the hill on the western end of the valley. It made my decision for me. I was going to get there.

I can assure you there is no greater feeling of happiness and relief in a crippled aircraft than to see the runway and know you have sufficient height and speed to get there. The landing was long, of course, but uneventful.

When I pulled back throttle on landing, the engine gave another almighty backfire and stopped dead as if to say that's all I've got. But that was all I needed. Thanks Rotax.

Then came the engine inspection. The minor oil stain I'd noticed had blown out and now covered the entire engine. When I removed the cylinder head air shroud I found the front cylinder had two broken head studs. The front cylinder head was no longer sealing on the cylinder. I'm now sure it must have had one stud broken previously which no doubt caused the oil leak at the base gasket. The really stupid part on my behalf was to not investigate the issue when I first noticed the seepage. The problem would have been quick and easy to find, just by checking the cylinder head nut tension - perhaps a 10 minute job.

I hope my experience will be a lesson for all. It certainly was for me.

Flying with the X factor

~ THE X-AIR HANUMAN ~

BY ROB KNIGHT

AS part of a holiday in New Zealand, I planned to validate my RA-Aus Pilot Certificate and use it to take my granddaughter, in recent remission with leukaemia, for a flight.

I called RAANZ (the Recreational Aviation Association of New Zealand) for advice. At their suggestion I then contacted the Manawatu Microlight Club in Fielding and arranged a validation flight.

A month later, on a typical autumn day for the region, I arrived at NZFI.

Fielding is located in the North Island and lies about 20km east south east of RNZAF base Ohakea. It is surrounded by flat to rolling lush green pastureland, diced by long trails of black tar-sealed highways. With a single bitumen runway and parallel grass for gliders, Fielding is home to a wide spectrum of operations and thus, periodically, intense circuit activity. Strict operating procedures are applicable.

Ready to validate me was the CFI of the Manawatu Club, Bill Penman. Bill has a mountain of experience, more than 40 years in air traffic control, much of it at RNZAF Ohakea and he is currently the chief controller at Palmerston North Tower.

After applying for RAANZ membership and getting from Bill a comprehensive briefing on local airspace and airfield operations, we walked out to the club's dark green X-Air Hanuman.

Like all X-Airs, ZK-MMC was manufactured by Raj Hamsa in India, but unlike the earlier X-Air-582, this is no open cockpit, minimum aeroplane. It is much more sophisticated with a fully enclosed cockpit and more dials on the dash. The fuel tank holds 80 L, it runs a Rotax 912 using around 14 L per hour, so it's flight endurance is around four hours 45 minutes with an hour's reserve. Therefore at an 85kt cruise one could expect a still air range of around 400nm.

After a radio call on 124.1, NZFI's unattended frequency (CTAF for Australian pilots) we taxied for runway 28. In addition to its wide cockpit, immensely impressive is this aeroplane's visibility, provided by its low mounted engine and full-sized Lexan doors. The bungeed main gear was firm and the positive nose wheel steering provided a good turning circle.

After the run-up, DVAs, obligatory radio call and a good lookout, I taxied onto the 28 centreline. I straightened the nose wheel, applied throttle and it leapt forward. Before I even got to full power, Bill was quietly suggesting I raise the nose to fly it off. We took around 70m of ground roll to get airborne with 10kts of headwind and that was with three-quarter tanks and two not-so-small men on board.

Bill advised 10° of flap and 55kts for best climb. This seemed contrary to aeronautical theory, but he was totally correct as the Pilot Operating Handbook later confirmed. Thus configured, the VSI settled at 880ft/m.

Considering the low engine position and the lowered flaps, the attitude for the climb was higher than I expected, but visibility ahead was still quite acceptable. To keep the ball in the middle required just the lightest touch on the right pedal.

As Bill had already warned, the ailerons were decidedly firm, but there was no issue with lateral control. Holding just the tiniest right rudder to balance slipstream yaw, we climbed straight ahead until, at 800ft, we turned right to vacate the circuit.

The big Lexan doors allowed great lateral visibility and out to port we could see a few showers washing the horizon. Ahead, green New Zealand countryside stretched away, climbing imperceptibly to the central North Island's volcanic plateau with the pointy peaks of mounts Ruapehu and Nauruhoe rising over the nose.

Climbing, with the aeroplane trimmed, the elevator felt lighter than the ailerons and more powerful, obviously aided by the slipstream. Comparing the feel of each control, harmony was quite limited, a trait the Hanuman holds in common with the X-Air-582.

We levelled off, set 5,000 RPM and trimmed. The level flight over-the-nose visibility was fantastic, the best I have ever seen in any single-engine aeroplane. After playing with the attitude for a bit, Bill suggested we try some level turns, so I obliged. Turns at 45° bank were a breeze, height was easily maintained with the speed falling to around 72kts. Balancing adverse yaw was undemanding. Bill had warned me that, while rudder input with aileron was certainly necessary, a little went a long way. He was dead right again.

Top: The X Air Hanuman
Centre: Fielding Field
Left: Ashleigh and Pop

Considering our weight the cruise speed was excellent at a consistent 85kts. The ailerons were even heavier at the higher speed, but the tail surfaces were slightly lighter, the extra airspeed not compensating for the lost slipstream. Hands off, the aeroplane flew quite well. There was no tendency to diverge. A stick waggle indicated it was neutrally stable in pitch but lightly spirally unstable, which is as it was designed.

Stalling was straightforward. Basic stalls were just a squashing mash with immediate reversion to controlled flight on relaxing back pressure to decrease the angle of attack. Stalls at varying flap positions were similar, except the downward nose pitching at the point of a stall was a little more definite with each increase in flap extension. However, with full flap and 4,000 RPM, the stall was quite sharp with a definite torque induced left-wing drop. Uninstalling with the stick and simultaneously stopping yaw with rudder foot, gave an immediate recovery. Adding full power, the total height lost in the wing drop stall was less than 150ft.

The best glide was achieved at 55kts, also with the flaps extended 10°. Trimmed to fly hands off with no power, the VSI hovered around the 500ft/m down mark. The book gives a glide ratio of 10 to 1 and this was borne out in practice. This lowered flap for best L/D could indicate that the design angle of incidence is set low, which might explain at least in part the excellent cruise speed for the horsepower.

We carried out an overhead rejoin at 1,500ft AGL and joined crosswind for runway 28. We waited for a glider to establish itself for the grass before being number two for the bitumen. With 20° of flap we flared nicely over the threshold and it rumbled gently onto its mains.

The second approach was to try a short take-off. With 10kts of headwind, 20° of flap and full power before releasing the brakes, we were airborne in about 50m.

After sending me out for three solo circuits, Bill signed my logbook. I was now Hanuman type rated and eligible to operate RAANZ aircraft using my RA-Aus Pilot Certificate for three months. If my New Zealand stay exceeded that I would need to pass RAANZ Air Law, take a pilot test and become certified under RAANZ requirements.

So I got to take my granddaughter for a flight and for that I am deeply grateful to Bill Penman for his kindness, generosity and time. I must also thank the Manawatu Microlight Club for its hospitality and the cups of tea we drank. I would heartily recommend this organisation to any pilot wishing to validate in their RA-Aus Pilot Certificate in New Zealand.

Clear Mind, Clear Prop

BY MICHAEL LINKE **CEO** & KATIE JENKINS **SAFETY, RISK AND COMPLIANCE MANAGER**

OCTOBER has become 'National Safety Month' in RA-Aus. The new initiative is designed to raise awareness within the membership of the importance of Human Factors.

We want to re-open dialogue and re-focus members on the need to consider Human Factors when flying and in decision making. We want National Safety Month to help reduce Human Factor related incidents and the number of fatalities which happen every year.

RA-Aus is focused on creating a positive culture shift to improving Human Factors and we will be providing refresher education for all members. We also want to improve the reputation of sports aviation within the wider aviation industry by creating a better and safer image.

After several fatal accidents in the first six months of 2015 we undertook a high level analysis of all fatal accidents in the past five years. We identified that most of them were Human Factor related. Our analysis revealed there was an urgent need for immediate awareness in this area.

> "Mandating more training for 9,500 flying members, in an effort to change the behaviour of a few, is not effective

The article, '5 years, 40 deaths – It's time to talk' (*Sport Pilot*, Pilot Talk, July 2015) gave an insight into these accidents and the requirement for a more focused discussion on the contributing factors in fatal accidents. In addition RA-Aus has completed several proactive things with a view to reducing the incidence of fatal accidents.

WHAT IS RA-AUS DOING?

OPERATIONS

Education and pilot proficiency programs are being researched in an effort to address pilot skills and decision making. This includes ongoing communications with education and training co-ordinators in the FAA and the EAA. Preliminary communications have been positive. These programs will be shared openly in the interests of improving safety.

Our new training Co-ordinator will begin development programs focussed in four key areas – Pilot Proficiency Training, L1 and L2 maintenance training and Safety Management training.

RA-Aus has introduced a number of initiatives to address deficiencies already identified in piloting skills and decision making in fatal and non-fatal accidents. These include introducing type training requirements to address the expanding variety of aircraft models in the recreational sector, a focus on increased Human Factor training and assessment for both students and biennial pilot assessment and ongoing redevelopment of Human Factors training.

MODERNISATION

RA-Aus has invested over $250,000 to upgrade and modernise its information technology systems and databases. Benefits resulting from these upgrades include improved record keeping, communication and analysis of defect, incident and accident reports. Through a customer relationship management module, safety outcomes can be communicated to the membership as a whole and/or can be targeted to those most at risk. A new website where members can log into their own secure portal to carry out routine tasks such as membership renewal, aircraft registration renewal and to lodge incident reports will mean increased interaction with RA-Aus and will be another opportunity to engage them with safety sensitive information.

TECHNICAL MANUAL

A complete draft of Issue 4 of the RA-Aus Technical Manual was completed in June and is currently undergoing an internal document review process. The complete manual will be available to CASA later this month for acceptance. Issue 4 has been re-written from the ground up and members will benefit from an easy to read, well laid out and understandable document. Safety initiatives incorporated in Issue 4 include staged inspections for amateur built aircraft and the issuance of a Permit To Fly to carry out flight-testing, by the Technical Manager.

SMS EXECUTIVE TRAINING

RA-Aus' Executive have each completed a five day Aviation Safety Management course. This involved formal training on Safety Management Systems, accident investigation and auditing. The objective is to ensure managers and key staff are upskilled, to improve consistency in accident investigation and auditing and to standardise the organisation's approach to challenges, in accordance with best practice.

We anticipate it will also provide CASA and the membership with ongoing safety assurance and confidence in the management of RA-Aus. We want to help CASA to improve safety by encouraging our pilots to accept their responsibilities via education on the development and implementation of a Safety Management System.

NATIONAL SAFETY MONTH

The focus of National Safety Month is aligned with the CASA Human Factor initiatives released in July 2015. By identifying safety related trends and risk factors, RA-Aus is working solidly towards developing safety communication and education material for its membership. Over the past five years, there have been 46 fatal accidents in RA-Aus aircraft. Our investigations and analysis have determined 39 (84%) of these were attributed directly to human factors and/or poor pilot decision making. So the question has been how can RA-Aus prevent these accidents from recurring?

MORE RULES?

We could lay down more rules and require a load more training in human factors and decision making. But these measures would be met with resentment and probably not achieve their purpose. Mandating more training for 9,500 flying members, in an effort to change the behaviour of a few, is not effective. Ultimately RA-Aus can only do so much. The responsibility, as it has always been, rests with the pilot.

CULTURE SHIFT

We need to think about the responsibility on all pilots who see or hear about others taking risks yet say nothing. A cultural change is required. A change in behaviour, with mates looking out for each other, with pilots feeling confident enough to discuss their mistakes openly so the lessons they learn from their mistakes can be passed on to others. Hangar talk is highly effective communication. How we achieve cultural change is the tough question, but with a number of planned strategies we believe, over time, we will see change.

Through the recent round of CASA Safety Promotion funding, RA-Aus has been granted $10,000 to contribute to this initiative. Some of this funding has been used for:

High Vis Vests – These have been distributed to all RA-Aus flying schools. They carry the slogan 'Clear Mind, Clear Prop' to ensure pilots focus on clearing their mind of distractions before they fly.

Safety Initiative Booklet – Included with this edition of *Sport Pilot* magazine is a booklet containing stories and information aimed at reducing accidents. Some of the subjects range from Low Flying, Fuel Management and Aeronautical Decision Making. We hope members will use this resource and carry it as a guide in their flight bag to help with pre-flight planning and the safe conduct of flights.

Hangar Talk – Another key initiative will involve bringing members together for a hangar talk session with their local CFI. RA-Aus has distributed small gifts for CFIs to hand out at these events to encourage people to attend. It will also provide them a pre-packaged presentation to deliver. These will cover areas of safety highlighted as key concerns within the organisation. We will be asking all CFIs if they can host hangar talks in their local area over the next 12 months. Keep an eye out in our electronic newsletters for a hangar talk in your local area.

At RA-Aus, your safety is our priority.

For the month of October we will continue the discussion about Human Factors in recreational aviation.

OPEN REPORTING

BY KATIE JENKINS **NATIONAL SAFETY MANAGER**

IT has been 12 months since we last spoke about the reporting of accidents and incidents and 12 months since we told you about the changes taking place within the RA-Aus management team to oversee these reports.

These days we in a position to identify the hazards within RA-Aus, both by identifying risks which cause accidents and incidents as well in as in the everyday activities of the organisation itself. Risk reports are overviewed using the RA-Aus Risk Management toolkit (https://www.raa.asn.au/risk-evluation-tool/). We can determine which occurrences require immediate attention, which required ongoing monitoring and even those which we don't believe are likely to happen again. We have also begun putting appropriate controls in place to avoid a similar accident occurring.

RA-Aus recently had the ATSB Notifications team deliver a presentation to our managers and Regional Safety Officers which covered the benefits of hazard reporting. Don't forget the ATSB is the government agency you should notify in the event you have an accident or incident (as well as Ra-Aus).

Section 4.08 of the RA-Aus Operations Manual will give you all the information you need to know in case of an accident or incident.

You will note in there reference to two definitions - Immediately Reportable Matters (IRM) and Routinely Reportable Matters (RRM).

An IRM is a serious transport safety matter which covers occurrences such as accidents involving death, serious injury, destruction of or serious damage to vehicles or property or when an accident nearly occurs.

An RRM is a transport safety matter which has not had a serious outcome and does not require an immediate report, but transport was or could have been affected. RRMs only exist for aviation and rail and would include a non-serious injury or if the aircraft sustained minor damage or structural failure which does not significantly affect its structural integrity, performance characteristics or does not require major repair or replacement of the affected components.

Besides the obvious safety benefits of reporting, there are also legal requirements to report certain accidents and incidents to the ATSB. Remember the ATSB does not lay blame or apportion liability—accidents are investigated by them with the intention to improve safety and prevent an accident from happening again.

2013	Jan-Mar 13	Apr–Jun 13	Jul–Sep 13	Oct – Dec 13	
Accidents (a)	4	5	13	37	
Incidents (i)	20	39	21	28	
Defects (d)	6	8	3	1	TOTAL
TOTAL	30	52	37	66	185
Fatal Accidents	7	2	0	2	11
Fatalities	9	2	0	2	13
2014	**Jan-Mar 14**	**Apr–Jun 14**	**Jul–Sep 14**	**Oct – Dec 14**	
Accidents (a)	29	32	23	22	
Incidents (i)	16	25	33	27	
Defects (d)	5	5	12	8	TOTAL
TOTAL	50	62	68	57	237
Fatal Accidents	0	3	1	2	6
Fatalities	0	4	2	2	8
2015	**Jan-Mar 15**	**Apr–Jun 15**	**Jul–Sep 15**	**Oct – Dec 15**	
Accidents (a)	29	26	7	-	
Incidents (i)	16	24	6	-	
Defects (d)	6	6	3	-	TOTAL
TOTAL	51	56	16	-	123
Fatal Accidents	3	4	2	-	9
Fatalities	3	4	2	-	9

Above information current as of 11 August 2015

A short video clip from the ATSB website discusses how under reporting of occurrences hurts safety (http://www.atsb.gov.au/safety-watch/under-reporting-of-occurrences.aspx).

It's a good reminder about open reporting can help the organisation improve.

At RA-Aus we use your notification to determine if we need to launch our own investigation. Notifications also give us a bigger picture of aviation safety trends and patterns.

Like a jigsaw piece in a bigger puzzle, notifications, even small ones, can often be joined together to reveal a broader, systemic problem. Once we've identified a trend, we can make tangible improvements to safety through advisory notices and recommendations.

Just like the ATSB, RA-Aus supports an open and fair reporting culture. This is also a key component of our Strategic Plan 2015-2018. The plan can be viewed on the RA-Aus website. It places safety as the integral key component of our organisational function.

SAFETY FEATURE

"It's a good time to have your parachute inspected"

LESSONS FROM A BLOWOUT

BY ROY BEISSWENGER

- THIS ARTICLE FIRST APPEARED IN POWERED SPORT FLYING -

RECENTLY, a Maverick powered parachute crashed during a routine flight in Florida, the headquarters for the manufacturer I-Tech.

There were no fatalities but the aircraft caught fire and burned after hitting the ground. The pilot and his passenger were both injured but not seriously. The powered parachute was scheduled to be shipped to Ecuador to be used in a missionary role, as are many of I-Tech's powered parachutes.

The aircraft had flown just before the accident flight and had landed smoothly.

The one bit of good news is that the pilot was very experienced certified powered parachute flight instructor and examiner. Troy Townsend is one of the Maverick's designers and was probably the best possible person to both salvage a terrible situation and provide investigators with a professional description of what had happened.

The accident was very similar to another which happened a few years ago in a different model of powered parachute, equipped with a different power plant and canopy. Evidence indicates the parachute wing had a blowout in the back seam. That allowed air to rush out of the opening and forced the cart into a steep spiralling dive. The one thing parachutes which have experienced cell blowouts have had in common is that they were each heavily wing loaded during their service life. Versions of the Maverick powered parachute certified as LSA have a mandatory gross weight of 600kgs. Versions certified as Experimental Amateur Built can have higher gross weights, especially since more than two people can fly on board at the same time.

Other factors that increase wing loading are the size of the parachute and the speed that the aircraft flies. How someone flies also has an effect on the wing loading. Parachutes stressed when flown aerobatic have failed a handful of times.

I-Tech took the precautionary step of grounding all Mavericks equipped with elliptical wings and moved to another design. The new wings fly slower but the wing loading is lower and the design is built to take much of the shock loading of skydiving, so should be more than adequate for the purpose.

Just a reminder to pilots that now winter is passed, it's a good time to have your parachute inspected by either the factory or a certified rigger. Parachutes have a service life that depends on their materials, construction, the environment in which they are used and how they are flown.

The best way to determine if a parachute is still serviceable is to have it professionally inspected. This becomes more important as a parachute gets older.

WHAT SAFETY MEANS TO ME

RA-AUS CEO MICHAEL LINKE ASKED SEVERAL OF THIS YEAR'S GYFTS SCHOLARSHIP WINNERS TO REVEAL THEIR VIEWS ON SAFETY. A FEW ALSO MADE UP POSTERS TO ILLUSTRATE THEIR VIEWS. HERE IS A SAMPLING.

NICK THOMPSON **GYFTS WINNER 2015**

"THE aviation industry is booming. From the constant rise in the number of young aviators taking to the skies, through RA-Aus registered flight training schools, through to the RAAF purchasing 72 new F-35 Joint Strike Fighters. This means there are greater numbers of aircraft in the sky and, with each of these aircraft, the pilot-in-command must be safe. Not only does a pilot's safety affect themselves personally but it has a greater effect on those around them.

"I believe in order to make a safe pilot, one must become passionate. Because within aviation, safety underpins everything. From our precautionary ground checks, keeping alert to the constant changing weather and then having the accurate knowledge of our chosen aircraft from prop to tail. From knowledge of how to properly manoeuvre the aircraft through all the stages of a flight, having sufficient knowledge of all our aircrafts speeds, being able to tell the difference between ground vs indicated air speed, stall speed, best glide speed, cruise speed, flap speed etc.

"But being a pilot isn't just about being able to fly the aircraft. It's also very much about knowing all your radio call signs so other pilots can read you clearly, to able to make perfect sense of what you are doing and where you are.

"Safety is in our instincts when the situation turns into an emergency. It's important to be mentally prepared for the unlikelihood of an engine failure and then have the knowledge of how your specific aircraft reacts without thrust and then be able to glide the plane into a safe landing.

"Safety also becomes very important when we, as pilots, make the decision about whether we are in shape to fly. Are we under stress? Are we tired? All of these factors may seem simple but when in the air, have a much greater impact on us.

"Finally I'd like to end by quoting "Safety within aviation is like a perfect circle, there are no corners to cut."

CONNAL MARTIN **GYFTS SCHOLARSHIP WINNER 2015**

"FOR me, as a new pilot, safety means I have to learn all the skills, rules, regulations and knowledge to allow me to gain experience and develop my confidence to become a proficient pilot.

"When I first started flying lessons, I thought I would be flying and learning some basic rules. As my lessons progressed, I quickly realised how much I had to learn to be able to fly and to fly safely. My CFI, John Walmsly, taught me that safety is everything, with planning and preparation also very important. My pilot friend and mentor, Rob Knight, told me much the same thing. Rob has also told me that I should try my hardest to find a reason not to fly and, only when I can't find that reason, it is ok for me to hop into an aircraft. Flying safely means I think of safety at all times. What I now realise is that thinking about flying safely doesn't just start when I sit in a plane. It starts a long time before that.

"Safety is an individual responsibility but it is also a community responsibility. The recreational aviation community has been very happy to share its knowledge and encourage me to keep learning to fly. Luckily, getting pilots to talk about flying is not very hard and I am a listener, not a talker. I like listening to other pilots, because their stories about what has happened to them and their past experiences will help me in the future."

JAMES KISSELL **GYFTS SCHOLARSHIP WINNER 2015**

"WHAT does safety mean to you?" is a deep question and different pilots will have different answers.

"For me it means I can fly without constantly worrying over the condition of the flight. It means no fear of the wings falling off without a moment's notice, no fear of accidents from entering cloud, no fear of some guy 'drink flying'.

"Sure, we shouldn't completely rule out these scenarios as never-present, but safety makes it 99.99% less likely to happen, provided the rules and regulations are followed. That's where most of the published accidents occur. Somebody somewhere breaks a simple rule and reaps the consequences, sometimes fatally. Take for example, the case of a pilot in Zambia, Africa, who broke the 'no going under 500ft AGL' rule during a scenic flight. He flew into power lines and he and his passengers were killed.

"It only takes a tiny rule to make a difference. It's so easy to break the rule and descend below 500ft to get that photo, with fatal results. However, if even the most basic rules are followed, it lets you fly freely without having to worry over the condition of the flight.

"Secondly, safety means I can take up non-pilots and share with them what we pilots get to experience when we fly. I can take them up and tell them, "You are perfectly safe up here," with a clear conscience. Safety makes it all the more enjoyable for them when they know the pilot sitting next to them is not a risk taker or a rule breaker, but a fully competent professional. Professional doesn't mean dull, rigid and haughty. Professional means maintaining a proper level of standards set by training. You can have fun without scaring your passengers to death. Even taking off is good enough for some first-flyers.

"As a passenger or student, safety means I can trust the pilot or my instructor knows what he or she is doing and my life will not be jeopardised. Since I am still 'fresh out of the nest', most of my flying is done dual. Quite frequently, I hand the controls over to my instructor when he demonstrates new techniques. Safety means that I can say, "Your aeroplane," and mean it. Without safety, I would be hanging onto the controls as my instructor did the manoeuvre. Without safety, I would feel like I was hanging by a thread until we were on the ground.

"Last of all, safety means I will live to fly another day. I can rest in the knowledge I am safe, my passenger is safe and the aeroplane is in good condition. It spares me medical and legal troubles that will prevent me flying. The RA-Aus motto, 'Safe, affordable, enjoyable aviation', is a good way to put it.

"Some might think all these sensible rules and regulations are a bother and not needed. However, I think that all rules which contribute to flying safely help us to stay aloft rather than keeping us grounded.

"Safety means a lot to me, as both pilot and passenger. I hope those who follow the rules keep obeying them and enjoy flying safely, and for those who are common rule breakers, to stop and think about why they are going over the line and risking their lives".

Tony King is the RA-Aus board representative for south Queensland

SAFETY FEATURE

SOMEONE ELSE'S EXPERIENCE

BY TONY KING

I FLEW my 95.10 Fisher FP202 Koala from south east Qld to Temora for NATFLY a couple of years back. I had a great time flying down and back (at 55kts) as well as at NATFLY. On the way back, I was heading home via Texas on the Queensland border after a fuel stop at Moree. This was plan B because there were storms in the area and I had decided my original plan of flying home via Goondiwindi was too risky. The storms were part of a weather system moving rapidly east. The wind pushing that system gave me a 35kt tailwind all the way to Texas.

As I approached Texas, I could see I was catching up with the weather – there was a massive vertical wall of cloud, from about 1,000ft AGL up to as high as I could see, sitting right over the town. I decided to land at Texas and, since it was almost 3pm, figured I was probably going to be there for the night.

After landing I tied the plane down, sent a message to my wife to let her know where I was and did all the usual post-landing things, before having a bit of a wander around the airfield, which took all of two minutes – there's nothing there. I was getting ready to walk into town to find somewhere to eat and stay for the night, when I noticed the weather had improved significantly, no doubt due to the same wind that had pushed me there so rapidly. After watching for a while I decided to see if I could get to my next stop, Clifton. I knew I wouldn't get home – even in perfect weather I'd run out of daylight – but I figured it was worth a shot at getting to Clifton.

So I untied the aircraft, made ready and took off. Once back in the air though, I could see flying to Clifton might be a bit of a challenge. I heard a couple of aircraft calling inbound to Inglewood so I called them to ask what they could see from there. The advice was that getting to Clifton was not a goer but getting to Inglewood should be no problem. One of the pilots was a friend, so I decided to have company for the night and headed to Inglewood where I landed and tied down uneventfully.

The next morning was overcast with very little wind and layers of cloud – a thin patchy layer at what turned out to be 1,800ft (about 1,000ft AGL) and a more solid layer at something like 4,000ft. After a bit of discussion between the three of us, my friend said he was prepared to give it a go. The other pilot and I both agreed to follow.

After we took off, I levelled out below the cloud, not much more than 500ft AGL. Due to the amount of tiger country in that area, this was not a comfortable or sensible height for a flight from Inglewood to Clifton. While I was wondering whether or not to continue, my friend spotted a gap in the first layer and climbed through it to 2,500ft. He radioed that he could see New Zealand from there so I went up through the same gap.

> "Though I'm a relatively inexperienced pilot, I am capable of making good decisions"

The lower layer was less than 100ft thick, but still enough to obscure the ground. This was fine for a couple of minutes because there were plenty of gaps in the cloud. But as I progressed I noticed the gaps in the layer below were getting fewer and fewer. Before long there were no gaps and I was worried.

Flying a single ignition two stroke powered aircraft, the potential for sudden silence followed by an unplanned (and unpowered) landing is always on my mind. Knowing what the countryside was like below – undulating bushland with occasional cleared patches – I was not at all keen on the prospect of emerging from the cloud only a few hundred feet AGL and having no choice about where to land. I started thinking I should go back.

About a mile ahead I could see what looked like it might be a gap in the cloud. I couldn't be sure and I certainly couldn't see the ground through it from where I was. I decided that if I got there and it wasn't a gap, I would turn around and go back to Inglewood – seven or eight miles behind me. I felt better for having made the decision to turn back, but it was still a tense minute or so before I got there and found it was not just a gap but a clear channel through the lower layer headed right towards where I wanted to go. Ten minutes later the cloud was gone and I had a very enjoyable (and uneventful) flight to Clifton and then home.

So, what did I learn from this? Firstly, and perhaps most importantly, while it's OK to seek advice from others, each of us has to make our own decisions and be responsible for our own safety. My friend's aircraft was way more capable than mine, more than twice as fast, with a much better glide ratio and a BRS. He's also a lot more experienced than I am. What might be safe for him is not necessarily safe for me.

I also learned what it's like to not be able to see the ground, knowing it's likely the ground below is not a good landing area and anticipating a loss of power at any moment. It's not a good feeling but it was a good lesson – and one I'm not planning to repeat!

And I learned that even though I'm a relatively inexperienced pilot, I am capable of making good decisions. The decision to avoid the storms between Moree and Goondiwindi was a good one – my companions at Inglewood went that way and didn't enjoy it. The decision to overnight at Inglewood rather than try and push on to Clifton was a good one. The decision to turn back when I realised I had cut off my emergency options was a good one, even though in the end I didn't have to act on it.

They say good judgement comes from experience, and if you're lucky it's someone else's experience. So now you have some of mine.

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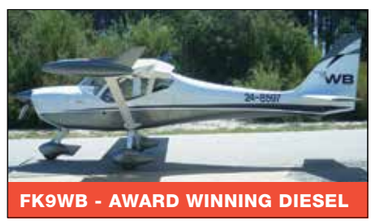
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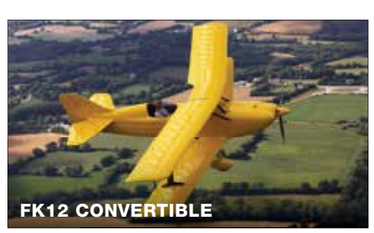
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RA-Aus at a glance

ALL ABOUT YOUR ORGANISATION

26.8%
The number of members from QLD. NSW has 25.5%, followed by VIC 23%, SA 11.6%, WA 7.3%, TAS 2.7%, ACT 1.8% and NT 1.2%

226,364.8 HOURS
Total hours flown in 2014, down from 243,637.7 total hours flown in 2013

171 SCHOOLS
The number of schools operating as of September 2015, up from 167 schools operating in 2013

2,756
The number of 3 axis aircraft being flown as of September 2015, up from 2,644 being flown in 2014

3,193
The total number of aircraft being flown as of September 2015, up from 3,085 the same time last year

9 DEATHS
The number of deaths reported in 2014-15 period, up from 5 reported in 2013-2014 period

23
The number of accidents reported in September 2015, up from 13 reported the same time last year

118
The number of Skyfoxes on the register in 2015

211
The number of powered parachutes on the register in September 2015

The devil in the detail

BY ERIN POTTER

Left: the Red Devil in all its finished glory with the ex (right) rendered on the tail

HOW did I get myself into this mess?

It all started in 2006 when I chanced upon an aviation magazine in the local newsagents. Crikey! There's a way to fly that won't cost the earth. And better still, there are planes that are just about affordable. But wait, it gets better, there are kit planes - I could build my own.

OK so cut the boring parts about all the flying training and me explaining to you all about the lessons of flight as though I was the first to discover them, blah, blah and the joys of that most memorable moment, the first solo. I don't recall it. Have I missed out?

Anywho, there I was with my RA-Aus Certificate in one hand and some nice people at the Credit Union who wanted to put money in the other.

I had been doing a bit of research into what plane to buy and where to keep it. All the hours of pondering came to an end when the friendly neighbourhood farmer said I could have a landing strip in his paddock, right next to my house. I could convert an old machinery shed on our property into a hangar. So now I was looking for a STOL aircraft, something which could cope with wind and paddock operations. Hmm a Zenith 701 or Savannah perhaps?

I have no criticism of the 701, but the Savannah pipped it to the post in my final choice, purely on the fact that the kit requires less work to complete. Pretty much the Savvy has almost everything you need in one box. OK it's a big box, but except for an engine it's nearly all there.

I made an enquiry to Outback Aircraft and a very helpful Tom Able told me all I needed to know about the Savannah. Not only that, but he arranged for a Savannah owner near me, to ring up and offer me a trial flight in his aircraft. I jumped at the chance and was impressed by the little plane. My order for a VG kit went in straight away.

While waiting for my kit, I started thinking about what colour it should be. Yellow seemed to be the favourite, possibly with black wing tips.

I had already received the purchasing paperwork from Tom, which gave all the details of the kit, including its serial number, 669.

Then something happened. I got a phone call from Tom.

"Can I ask you to change something on your paperwork?" he asked.

"Yeah, OK, what?" I asked.

"Um, I just need you to change the serial number of the kit from 669 to 666."

"Ah, the number of the beast," I joked.

Tom said, "Oh you know about that do you? Is it going to be a problem?"

I told him that it didn't matter to me, I just wanted a plane.

So, I amended the paperwork and began to think.

"666."

I began to think my plane would not only have a colour scheme, it was going to have a character and a name. So was born the idea of a bright red plane with its name 'Little Red Devil' on the nose cowl. But then the idea grew, I need a picture of a little red devil to go on as well. I used as inspiration, a former girlfriend who turned out to be a bit of a devil to me.

All this all went on the back-burner once the kit arrived. Again, I'll cut the blow-by-blow account of the build process. Those who have been through it already know what's involved and those who haven't only need to know a few things.

First, you have to have some idea about basic metal, wood and glass-fibre techniques, electrics, mechanics and use of hand tools, together with an eye for detail and the discipline to keep an accurate build log as you go. The other, and possibly most important thing you need, apart from a range of tools and a good workshop, is a supportive partner (don't even start a project without one).

I realised very quickly I was no paint sprayer (you can't be perfect at everything). So I sought the services of a professional paint sprayer and I'm so glad I did. It cost a packet, but to have all my hard work building a perfect aircraft ruined by a half-arsed paint job was just not going to cut it. I had to explain what shade of red I was after, because I couldn't find a suitable sample anywhere. Full marks to the painter. He got exactly what I was on about and came out with the brightest red I could have wished for. Oh, and by the way, I had managed to get the most expensive colour I could have chosen, so a word to the wise - a white paint job is cheapest.

All the completed parts of the aircraft were trailered to the painter's while I went home to think about the artwork I wanted. The internet led me to an airbrush artist in Adelaide and, after a couple of what must have seemed to her as bizarre emails, and she was on board. Photos and home-made lay-ups emailed back and forth resulted in the finished product, a one-off custom airbrush painting of the Little Red Devil herself, a good likeness of the 'ex'.

So all I had to do was take a photo of the finished picture and get it turned into a vinyl sticker. This was done via a local sign-writer and, because the picture was going on the tail, I wanted her to face forwards on both sides, so they made an original and a reversed copy. They also did the lettering for the nose cowl and my rego numbers.

Then I went to see the local farmer to work out exactly where the landing strip would be in the paddock. Oh dear, he had changed his mind and now didn't want me flying in and out of his paddock, because he thought it would be an insurance risk.

He was actually planning to sell the land and didn't want a runway spoiling his chances. But I now had an almost finished plane with nowhere to fly from. I couldn't continue to build at home because it would be stuck there forever. So back I went to those nice people at the Credit Union and came away with enough money to build a hangar on an airfield far away. Not ideal, but I had to do something.

Then it was back to the paint sprayer to pick up all the bits of the plane.

"What do you think of the colour?" he asked when I got there.

"It's red, it's very red," I replied.

So all I had left to do was get everything to my new hangar and put it all together.

Finally, after 602 hours of hard work, I had a finished plane, complete with graphics and artwork. The inspector was satisfied with everything, even if he did find the idea of me having my 'ex' on the tail amusing.

Once the rego certificate came through, the Little Red Devil took to the air and she flew brilliantly. Obviously my attention to detail while building her had paid off.

Like they say, the devil is in the detail.

Getting to know George

BY BRIAN BIGG

I HAVE spent the past few months getting to know my new best friend, George, the autopilot.

(No, no-one really knows why 'George'. The best I can find on the internet (so it must be true) is that the term was used by the first pilot to use an autopilot, Navy Lt. Patrick N. L. Bellinger to refer to autopilot inventor, Lawrence Sperry's seemingly magical, invisible co-pilot which had joined them in the cockpit).

By the way in 1916 Sperry took a married socialite, Mrs Waldo Polk, for a training flight offshore near New York. Turning on the autopilot, the two proceeded to get up close and personal in the cockpit. In the heat of the moment Sperry bumped the gyro and the seaplane flew a descending curve and crashed into bay. Luckily, two duck hunters paddled over and rescued the pair who were naked. Sperry told the press the force of impact had ripped off their clothes.

(Source:fly.historicwings.com)

Installing an autopilot has been one of the things on my wish list for some time now. When I was building my aircraft, I deliberately kept the panel clear of instruments which might encourage me to take risks. No artificial horizon, no directional gyro, no electric lighting - nothing which would encourage me to stray closer to the clouds or the sunset than was reasonably safe considering my own personality weaknesses. When I flew GA, these little pilot helpers dangled the bait in front of me dangerously on many occasions.

"I now fly along and look out the window! I've never done that before"

I know what I'm like. I'm a risk taker by nature and by profession. Depending on your own point of view, it's either a curse or a benefit of being a person who makes his living being creative. It has led me into a lot of adventures over the years, including a few I should have avoided. But I learned early that my sort of personality doesn't make for a safe, dependable airline captain. Sigh. So when I fly I've learned to screw down my troublemaking side and for years it's been second nature to do that. When I get to the hangar I become Captain Sensible. It has kept me right side up-so far.

When I built my aircraft, Captain Sensible insisted no bells and whistles (Even without them, I've been in too many situations where the loudest noise I could hear was my own heartbeat).

However flying without any assistance at all has been a slow burning irritation. Over long distances it's exhausting. At the end of a four or five hour leg through turbulence, I'm usually wrecked and off to bed early (don't tell me I'm getting old, I know). Often while flying, I've looked down at a map in my lap, only to discover when I looked up that my aircraft and I were tilted over at 45° and rapidly heading towards the ground. Looked down again to make an entry on my flight plan and climbed 200ft without even noticing. That happened a couple of times in controlled airspace, which was hugely embarrassing. Even on the calmest of days, I know I can't take my eyes off the road for more than a few seconds. Very frustrating.

So when my Garman GPS 2 spluttered to a stop after 15 years of loyal service recently, I went out and bought a Garman 695 (bell). I also outvoted Captain Sensible and bought myself an EZ Pilot from Trio Avionics to connect it to (whistle).

Australian agent for the EZ, Jake Jansen at Aero Assist, was very helpful. The installation instructions on the other hand, were not. They were written by someone for whom English was only a remote possibility, but a call to Jake got me sorted out.

And by golly, George has certainly changed the way I fly. I still plan the trip on paper first, after all that's the bit of aviation I love the most (I can spend days poring over the maps and plotting a journey). But when I get off the ground, I absolutely love now being able to push one button and have my beautiful aeroplane take me effortlessly along the pink line to my destination. It's spoiling me. Sometimes I use it even on short hops around my local area.

There are some things which take getting used to. In bumps, I still fight the urge to level the wings myself, even though I know George will do it happily for me. And my previous sloppy habit of only roughly trimming has gone out the window. I now find myself fiddling with the trim quite a lot to get it just right. Because, honestly, I have nothing else to do. I trim, check my frequencies, mark my position on the map, update my flight plan and.... then nothing.

That's the biggest change the autopilot has brought to my aviation. I now fly along and look out the window! I've never done that before. Sure I knew there was dirt down there, but only because it had navigational features I needed to help me complete my journey. Now I find myself just looking at the ground as a tourist. "Oh, look, there's a pretty lake." "My, hasn't that town grown since I last flew over."

It's weird and it feels wrong, like I'm cheating somehow. I usually double check everything again then ...nothing. So I look out the window again. I suppose I'll get used to it. Long trips are certainly not as tiring. The autopilot might encourage me to do more of them. My biggest issue? What to do with my feet now the rudder pedals don't need them anymore. Maybe I'll start bringing along a book to read.

So George and I are getting on just fine thank you. Next step is to really test him out by finding some clouds to fly through. Just kidding Captain Sensible.

Troy Smith's immaculate Beech T34 Mentor and (inset) classic cars on display

Grafton damp but busy

BY KEVIN WILSON **PRESIDENT GRAFTON AERO CLUB**

THREE weeks of cold clear nights and warm sunny days gave way to heavy skies on Sunday morning and we wondered if anyone would even turn up to the 3rd Grafton Aero Club Wings and Wheels Open Day in August.

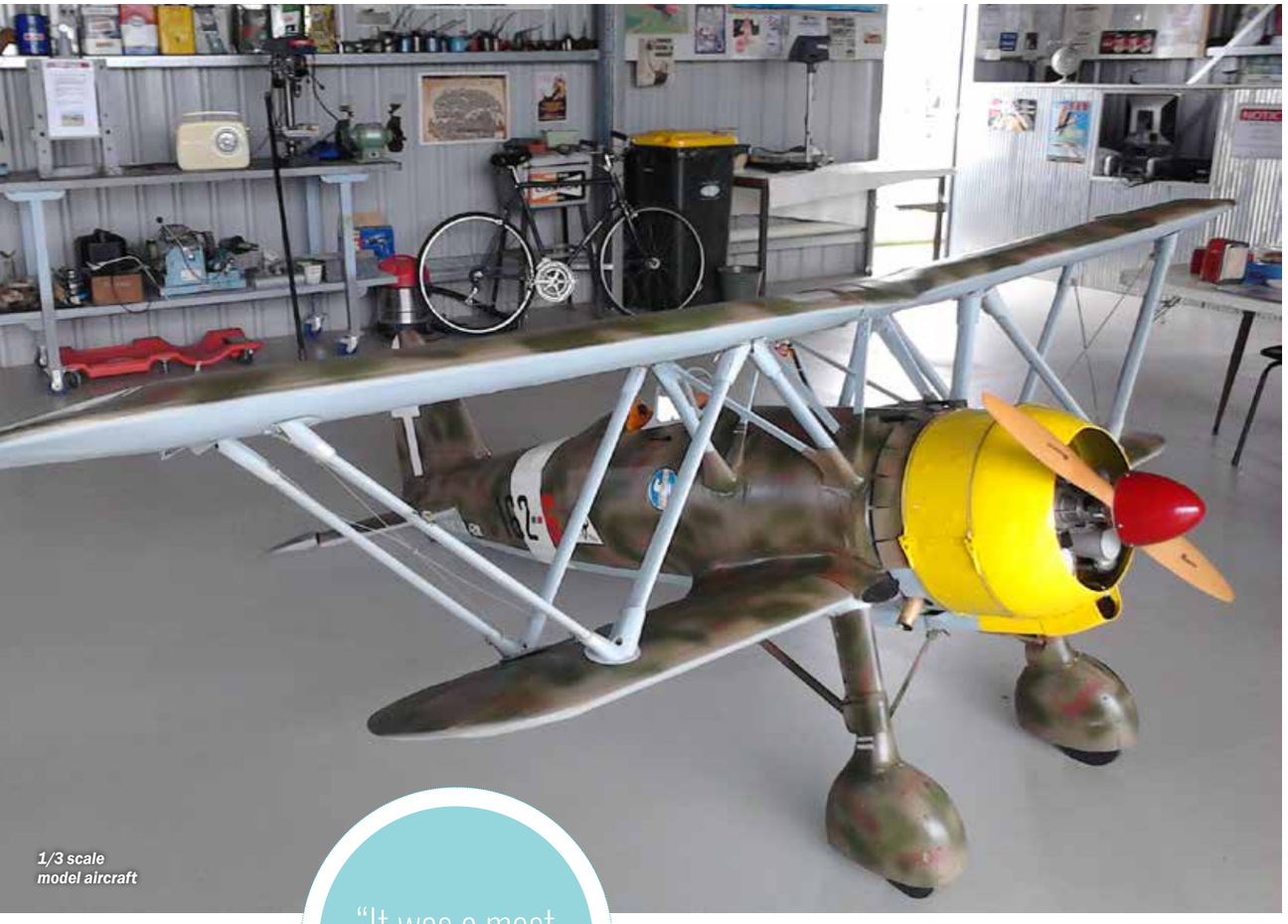
We were ready. The gazebos had been set up, steaks, sausages, soft drinks and other good stuff overfilled the fridges. Restricted areas had been cordoned off and signs made. Club members waited with anticipation... and it was raining.

Just after 8am though, the rain stopped and our first exhibitors began to arrive. A few of the local car club members drove in and aircraft began emerging from hangars to be put on display. The phone was going crazy with callers asking "What's the weather like?" and getting the response "It's improving".... and it was.

Aircraft began arriving from about 9am. At the field, the blacksmiths had set up and began beating pieces of red hot metal into various forms next to stationary engines which were thumping away at about 90 RPM. Next to these were the Go-Karts and the public began coming through the gate. The Model Aircraft displays were set up and, in one hangar, two 1/3 scale large models. As well as all that, the largest model train display in Northern NSW opened its doors for the first time.

It was bedlam.

Classic, vintage, sporting and other unique cars and motorcycles began to arrive and the people in the clubhouse kitchen were frantically getting morning tea arranged. Aircraft were taxiing to their tie down areas and overhead patches of blue sky began appearing. It was still no good along the coast though and Ewan McRae arrived by car instead of by C172, leaving Sarah at Ballina to fly down if it cleared. Eventually she set off but the window of opportunity was short.



1/3 scale model aircraft

"It was a most enjoyable day"

Mark Awad in the Winjeel reported he could not get out of Ballina. Troy Smith arrived from Caboolture in his recently imported immaculate Beech T34 Mentor resplendent in US Air Force colours.

By 10:30 it was all happening. Our resident band, the Croozin' Broadways played to an ever growing crowd and the public continued to pour through the gate to check out the displays. Joy rides in the C172 and Warbird flights in the T34 were popular, and some people took TIFs in the Foxbat.

The weather threatened again around lunchtime, but luckily all we got was a shower. The weather did prevent a lot of aircraft from coming, but those who did were made most welcome by the club and the Grafton public.

It was a most enjoyable day and several hundred dollars was raised for the Children's Ward at Grafton Base Hospital.

Also the profile of the Grafton Aero Club and South Grafton Aerodrome were again raised high.

Some aircraft made it in

It was bedlam

What lies beneath

BY ANTHONY SIBARY

"LOOK Dad...traffic!" My son's voice was crystal clear through my headset. We were on late final for 36R at YOAS and for a split second everything seemed to stop.

How could I have missed another aircraft? I was looking and listening as I always do, there were no other aircraft in the airspace and no radio transmissions.

Suddenly, it all became clear. "Down there, on the road Dad, it's a convertible". That few seconds had felt like an age. I made our landing a full stop instead of my planned touch and go because I thought it best to have a little chat with my son and remind him of my expectations when he is my passenger. We ended up laughing about it as we taxied to the run-up bay to continue our flight, but such a simple and innocent use of the word 'traffic' made for a very interesting approach and landing.


Hidden Valleys

"Can I have a flying lesson, Dad?"

"Sorry Dad," my son said. "It looked like a cool car!"

That's teenagers for you. I asked him if he remembered our chat, when I explained how important it was for me to concentrate during base and final. "Yes Dad", he said. "No talking because you are concentrating and looking and listening for other aircraft."

Now obviously, I do that all the time I am in the left seat but I find it best to have silence (zero chatter) in the cockpit when on base and final. This may be different to what other aviators do and that is fine. I do what works best for me.

This flight gave me a chance to show my son what I told him we pilots refer to as 'tiger country'. To the southwest of the training area lies some incredible wilderness area and this day the valleys were obscured by low lying cloud (see the photo my son took). Not only is the terrain mountainous and covered in trees, but the low cloud emphasises the danger perfectly.

I explained to him that we could only ever fly over ground which provided us with a safe place to land in an emergency. I described how the wind and weather conditions in mountainous terrain presented specific hazards to aircraft. And also how flying into and through valleys might seem awesome, but valleys do not last forever and they are a favourite place for high voltage power lines.

The look on my son's face showed me he knew exactly why it was called 'tiger country'. Maybe one day I will train for low level flight, but I don't have the experience and / or endorsement for that yet.

He took some great photos of the terrain and I was glad to share some more flying safety tips with him.

We had completed just over an hour of flight time when my son asked me "Can I have a flying lesson, Dad?" "Of course you can mate," I replied. "I will talk to John and see when he is available". I thought my son's face was going to split, his smile was so wide!

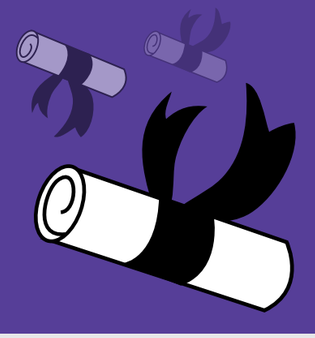
As I write this, my son has yet to have his first lesson. Rest assured when he does I shall share all the details with you. As for me, I'm busy trying to decide whether to hold off on getting my cross country endorsement and go for a tailwheel one instead.

I am going to have a chat with my CFI Dave Rolfe and discuss my options with him. It is a pretty cool decision to make, because the result is a win / win.

I realise this is an aviation publication, but I just wanted to say a heartfelt goodbye to firefighter, Drew Cullen. He was killed in a car accident driving home recently. He was an awesome workmate and one of those guys it was always fun to be around. His family and the community have lost a truly selfless and courageous fireman. We all miss him.

See you in the pilot's lounge for cocktails and debriefing.

Partial power loss



BY PROFESSOR AVIUS **AVIATION GURU**

WE all know our instructor will, when we least expect it, simulate an engine failure on take-off and during other phases of flight.

Most instructors relish the opportunity to casually pull the power to idle on the upwind leg and gauge the student's response. Lately there has been a push towards training and preparing for the partial power loss and certainly CASA has highlighted this little nasty as one of the more significant factors in some pretty serious accidents over the years.

So what is the problem? Why is a partial power loss any different to a complete engine stoppage?

If we put ourselves in the mind of a low time pilot for a moment, we can get a sense of where the issues are.

First of all, the pilot might not even notice there is a problem at first. In the take-off, the pilot might happily hold the climb attitude, not noticing the RPM either doesn't reach maximum or slowly decreases.

So here is the first major problem, holding a familiar attitude but the aircraft is quietly not performing well enough to out climb terrain or obstacles. Very nasty.

Secondly, if the power loss is noticed by the pilot, what have we taught him to do about it?

The complete stoppage is well rehearsed and will hopefully trigger an automatic response. The pilot should lower the nose and land straight ahead. But what if the band doesn't stop playing totally, but just goes very quiet? What then?

The indecision could lead to significant errors, which could compound very quickly into a catastrophic event.

Partial loss of power is caused by a fuel blockage or fuel starvation. In this case the engine may surge unexpectedly. The engine will tend to lose RPM, then surge, then lose it again - over and over again in quick succession. This plays havoc with the handling of the aeroplane, it will pitch and yaw with the power changes. The pilot could easily become fixated on the engine and forget to fly the aeroplane safely which is, obviously, our aim as instructors.

So what are some tools we can give pilots to handle a partial power loss?

The professor is a firm believer in keeping it simple. The KISS principle (keep it simple stupid) should be applied to complex problems - the more complex the problem, the simpler the procedures for dealing with it need to be.

As always, a pre take-off safety brief is a must. Take a moment to think about just what you would do if the power is reduced, as well as if it stops completely.

For instance, is there a cross strip? Is there a safe landing area straight ahead or off to the side that can be easily reached? What is the terrain like in the circuit area? Would a left or right turn keep you clear of hills?

So we should encourage forethought.

Secondly, we should teach the pilot to get into the habit of doing a power check on the take-off roll as part of normal take-off procedure. Once power is applied, check the RPM actually indicates full power. Most types will have a max/min static RPM indicated in the POH. If full RPM is not achieved, the student should be taught to pull the throttle and abort the take-off.

When the engine experiences a partial power loss when airborne:

- Establish best glide speed as soon as possible. This speed is associated with the best lift / drag ratio, so the aeroplane will get the most bang for its buck.
- Work out if the aeroplane is descending, level or still climbing. If it is descending, normal procedures should apply. Look for somewhere to land straight ahead, or slightly left or right, and always assume the engine is about to stop. No steep turns.
- If the aeroplane is maintaining height or climbing, go to step 2 - navigate. Keep turns gentle and put the aeroplane into a position where a glide approach to the runway can be made. Perform a close circuit and use what power is available to get yourself into a good position for final and landing.
- If you have time, perform a trouble check. CMF. Carby heat – mixture - fuel. Check the fuel pump is ON, change tanks (if you can) and check the contents.
- Don't try and nurse the engine. Use what it has left to put you into a good position to land. The engine can be replaced, you cannot.
- Delay the flap and aim to land about 1/3 of the way along the runway and you should get back safely.

Instructors can practice partial power loss scenarios in various stages of flight, with an emphasis being to flying the aeroplane first and foremost, obtaining best glide speed and constantly assessing the performance while they gently maneuver the aeroplane into a good position.

In a take-off, pilots really only have two choices - either pick a good area straight ahead, or gently get the aeroplane into a good glide position and bring it home. Remember, the credo always applies - Aviate, Navigate, Communicate.

All in a spin

DESIGNING YOUR OWN AIRCRAFT BY DAVE DANIEL

UNLESS you happen to engage in aerobatics, it's unlikely you have ever found yourself at the controls of a spinning aeroplane, especially given that intentional spinning is prohibited in RA-Aus aircraft and unintentional spinning is all too frequently fatal.

From the very beginning of our flying careers, avoidance of stall/spin accidents is drummed into us by our instructors. Understandably though their focus is on incipient stall recognition and stall prevention - after all the easiest way to avoid getting into a spin is not to stall in the first place. While a spin is seldom the root cause of an accident, it is where most loss of control events end up if not properly managed, so it's accepted that designing an aeroplane which is resistant to spinning, or at least one which can be easily recovered from a spin, is a good idea.

But before we delve into the design side I'd like to concentrate on the spin itself. Most pilots have a decent general idea of what a spin is, and we are all instructed on the steps to follow to get out of one. But how or why a spin 'works' is usually much more of a mystery. So let's have a look at the anatomy of a spin and develop a clearer idea of what it is we are trying to avoid.

In essence a spin can be described as, 'a stable asymmetric stall during which the aircraft undergoes autorotation', which is certainly concise, but not very enlightening. So let's put it another way. A spin results from the combined effect of gravity and the aircraft's aerodynamic properties driving the aircraft to follow a rapidly descending corkscrew path, as shown in figure 1. The resulting motion is a combination of roll, pitch and yaw with the aircraft in a banked and nose low attitude, but still experiencing a high angle of attack due to the rapid rate of descent. The nose of the aircraft points closer to the axis of the spin than the direction of motion placing the aircraft in an outwards sideslip.

Initial entry into a spin is triggered by the aeroplane stalling while yawing. In the real world this is usually the result of a poorly coordinated skidding turn executed at a low airspeed. The skid causes the wing on the inside of the turn to exceed its stalling angle of attack while the outside wing is still flying. The resulting asymmetric stall has two effects: The loss of lift causes the wing on the inside of the turn to drop, while the sudden increase in the stalled wing's drag induces the aircraft to yaw sharply towards it. The overall increase in drag and abrupt manoeuvring rapidly bleeds off more airspeed, stalling the outside wing as well and causing the aircraft to fall into a spin as shown in figure 2. The autorotation effect which produces the sustained spinning motion results from the difference in angle of attack between the inside and outside wings as shown in figure 3. Both wings are stalled, but the outside wing sees a lower extreme angle of attack than the inner and so produces more lift and less drag. This imbalance between the forces on each wing causes the aeroplane to rotate.

Figure 1 *- A fully developed spin - the aeroplanes centre of gravity follows a corkscrew path around a vertical axis.*

While an unintentional spin is typically triggered by an unstable departure from controlled flight, once established a spin can be highly stable, even to the point of being unrecoverable. Initially a spinning aeroplane will assume a steeply nose down and highly banked attitude, however if the spin is allowed to develop, the aircraft will progressively pitch up into a more level attitude producing what is described as a flat spin. The flat spin is accompanied by a higher rate of rotation which required longer to recover from or may, in the worst case, be impossible to get out of.

Different aeroplane designs exhibit significant variations in their spin behaviour, with some types spinning easily while others require considerable piloting skill to be induced to spin at all. However aerodynamics is not the whole story and weight and balance is also critical to an aeroplanes' spin behaviour. The further aft the C of G the more spin prone an aircraft will become and the slower it will be to recover; yet another good reason not to load an aeroplane outside of its permitted range. Non-aerobatic types and aircraft used for training should display docile spin behaviour and recovery should be straightforward and rapid - provided the correct actions are taken. It's worth noting that not all aircraft require the same recovery technique so you should check the POH for any aircraft you fly. But a generic recovery technique for an upright spin is as follows: First cut the power and centre the controls, then apply maximum rudder to oppose the spin direction. Once full rudder is applied the stick/yoke should be moved briskly forward. The aim of these actions is to counteract the sideslip and lower the nose enough to regain flying speed, at which point power can be added and the plane returned to normal flight.

It's pretty clear from the preceding description that recovery from a spin requires both time and altitude, two things you don't have when turning final in the circuit. It should also be clear that you can't have a spin without a stall, so a continual awareness of your angle of attack (and by association, your airspeed) is vital requirement for safety.

Hopefully you now have a good grasp of what a spin is and how one comes about, so you are fully prepared for next month's article in which we'll be looking at designing for spin resistance and recovery.

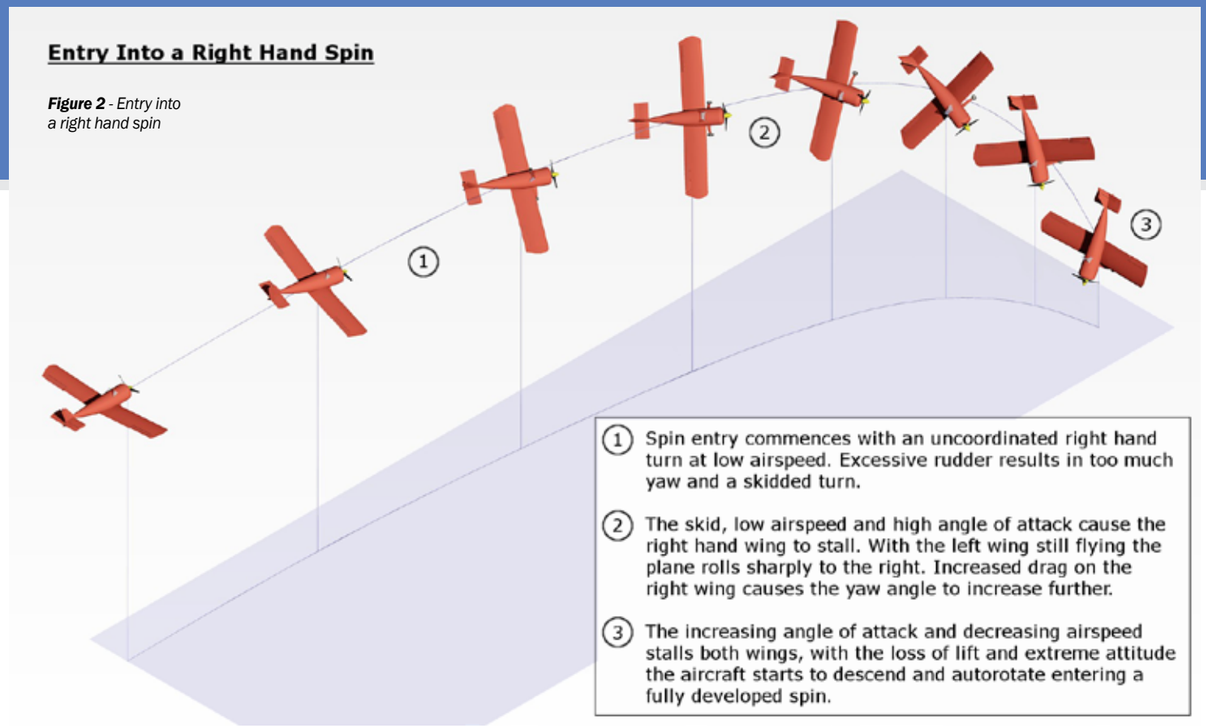
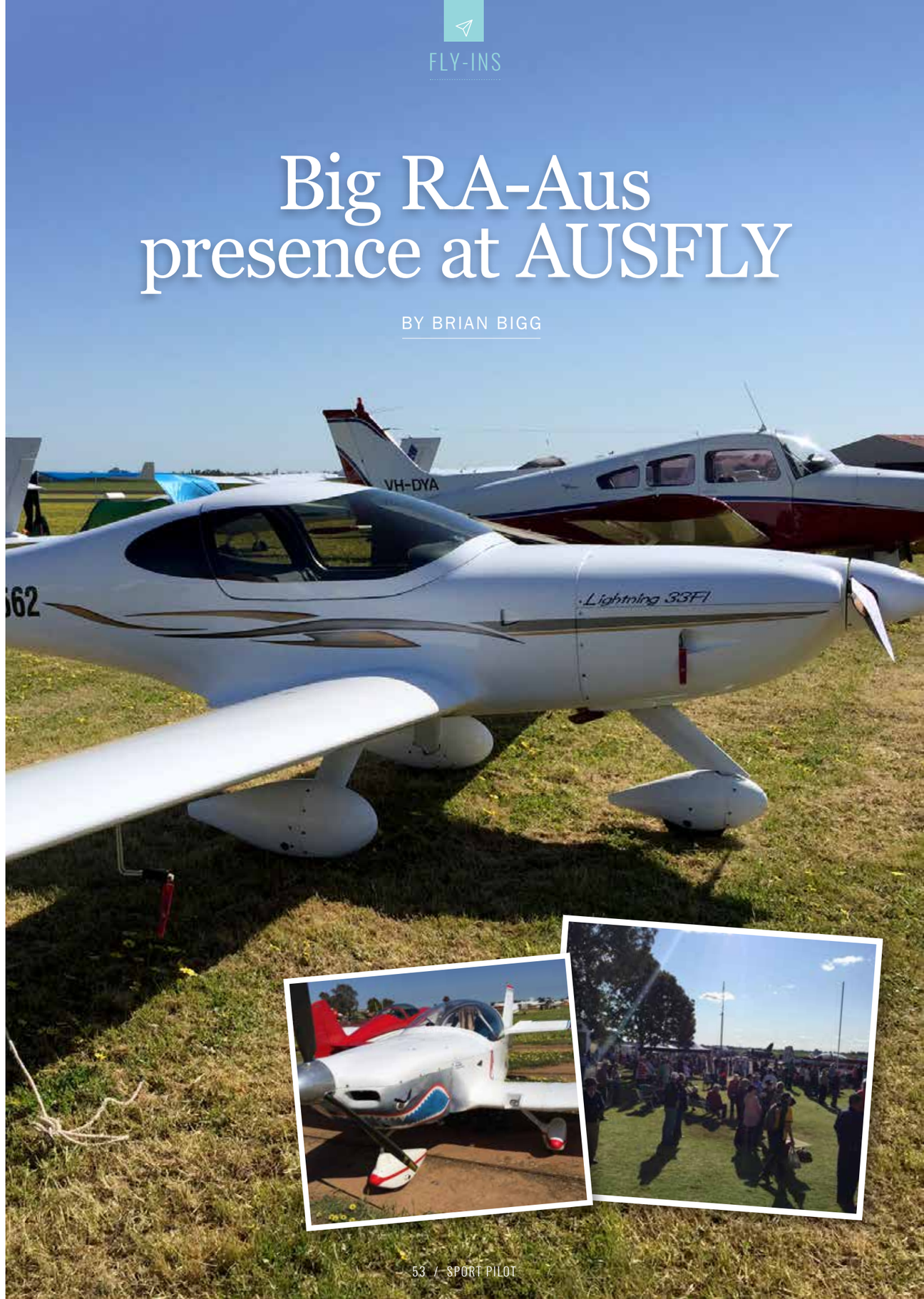


Figure 2 *- Entry into a right hand spin*

Figure 3 *- The forces acting to induce autorotation*

Big RA-Aus presence at AUSFLY

BY BRIAN BIGG



The RA-Aus stand was busy all weekend

Holly Adams' Jabiru drew a crowd

1 in 4 aircraft at Narromine were RA-Aus

Alan Searle and Kyle Lee's beautiful Rans RV-12

- AUSFLY AT NARROMINE -

AUSTRALIA'S fickle spring weather played tricks on the organisers of the 2015 AUSFLY, held in Narromine in September.

Bad weather across much of the east and south coasts of Australia prevented a lot of pilots from making the commitment to fly into Narromine for what is gradually becoming the premier convention for light aircraft now that NATFLY is taking a break.

But the weather in Narromine on the two main days, Friday and Saturday, was just about perfect and big crowds turned out to watch the aerial fun and games.

SAAA's AUSFLY organiser, David Brown described the weekend as 'full on' and 'very busy'.

"We counted 150 planes on the ground on Friday and 300 on Saturday," said David. "As well, our Unicom volunteers reported 150 movements on Friday and over 250 on Saturday. So all in all, very healthy even if it was down a little on our expectations."

The SAAA says a lot of pilots who couldn't fly in still managed to drive in.

"We counted more than 2,000 people through the gate on Saturday," said David. "That doesn't include children who were allowed in free of charge."

"The aero and gliding clubs reported they sold a lot of food, and our 45 trade exhibitors all reported they were happy with the number of people who stopped by to ask questions."

The Saturday night dinner drew 182 people and speeches were given by CASA boss, Mark Skidmore, and RA-Aus' own Michael Monck, who has been a big supporter of AUSFLY.

"AUSFLY gave us a good opportunity to continue to engage with our members and the broader industry," said Michael. "From our perspective it was great to have an event which welcomes all forms of aviation. We're looking forward to working more closely with SAAA, other self-administering organisations and the broader aviation community to bring the sector together and form a more cohesive and productive industry in Australia."

Mark Skidmore was widely greeted and congratulated for being there. Mark flew his Globe Swift to Narromine. Most comments were about how good it is to have a boss of CASA who actually likes aeroplanes.

A stroll along the lines on Saturday revealed about one in five of the parked aircraft had numbers on the tail. According to David Brown, last AUSFLY it was one in a hundred.

In the air, Paul Bennet did his usual excellent job and the Roulettes amazed the large crowd. The high level of skill of Australia's aerobatic athletes is impressive.

If you've been to NATFLY, then AUSFLY will look and feel much the same to you. It will be on again next year. Might be worth planning to visit if the weather looks good.

Surviving the crash Part 2

BY BARNABY WAINFAN

- REPRINTED WITH THE KIND PERMISSION OF KITPLANES -

SOMETIMES airplanes and the ground meet under less than ideal circumstances. But there is much the designer can do to help keep the participants in an accident alive. With careful design, many of the factors which lead to injuries and fatalities can be made much less severe.

In Sport Pilot September 2015 I discussed what does the damage – Deceleration, crushing, impact, sharp edges and points and fire. And how it's the designer's task is to reduce impact loads to a minimum.

CRUSHING

Once all the loud noises stop, it is essential the people inside the aircraft be left with a living space bigger than they are.

Even if the cabin deforms under crash loads, it should not collapse inward and crush its occupants. There are two primary forms of cabin crushing to consider.

TELESCOPING

The first is the accordion-style compression, caused by the deceleration forces in a frontal impact. The strength of the cabin walls and floor are major players in determining how much the cabin will shrink fore-and-aft.

The impact forces exerted on the cabin are equally important. Here the designer can attack from both ends. First of all, heavy objects behind the cabin should be eliminated. If it is necessary to place heavy objects behind the crew compartment, as is the case in a single-engine pusher aircraft, the cabin walls should be strongly reinforced to withstand extra longitudinal load. If the front of the airplane hits something and stops, the only way an object in the back gets stopped is by forces exerted on it by the airplane structure. If the structure is not strong enough, the object moves forward, crushing the intervening structure and space.

At the front end there are several things a designer can do to reduce crash impact forces. The first is to provide some sacrificial crush space forward of the rudder pedals. In a frontal impact, the structure in this space can crumple and absorb energy without invading the crew space. Crush space is only useful for safety if there is energy-absorbing structure within it to crumple. The length of the crush space adds to the overall stopping distance of the crew and seats and reduces the overall force on the rest of the airplane.

Even a relatively small amount of crush space can make a big difference. Figure 3 shows the effect of stopping distance on G loading for a 60 mph initial impact. If the nose digs in and stops within one foot, if the airplane was rigid, it would experience a deceleration of approximately 120 Gs everywhere.

This would probably be fatal to those aboard. If there was one foot of crush space ahead of the cabin, the G-loading in the cockpit would go down to about 57 G, which would probably cause injury, but be survivable. The addition of a third foot of crush space would bring the deceleration down to a point where there is a reasonable chance of avoiding serious injury.

The curve in figure 2 also tells us something important about the design of the front of the airplane. If the nose digs into the dirt in a low-angle impact situation, it will bring the airplane to an abrupt halt, imposing large, injurious G-loads on the occupants of the airplane. If the nose of the airplane is designed so it tends to slide over the surface without digging in, the stopping distance will be increased and the probability of survival will accordingly go up.

On single-engine airplanes, the lower edge of the firewall is typically the culprit in digging-in scenarios. The cowling is usually not strong enough to act as a runner on the surface of the ground. If the cowling tears away, the hard corner between the firewall and the bottom of the fuselage acts like a bulldozer blade and digs in, causing a rapid deceleration. A radius at this junction, or the addition of a runner-like structure ahead of the firewall inside the cowling would greatly reduce the chances of severe digging in, and increase survival rates in flat-impact accidents where the landing gear fails.

FLIP-OVERS

The second type of crushing occurs if the airplane flips over during the accident. If the top of the cabin is not strong enough to withstand the weight of the airplane, there is a likelihood of a fatality or severe injury. An unprotected pilot in an open-cockpit airplane is in even more jeopardy.

There are many homebuilt designs which provide insufficient protection for the crew in flip-overs. There are some open-cockpit airplanes which lack even a headrest behind the pilot. There are also many low-wing bubble-canopy airplanes which have little or no strong structure above the pilots head to protect them. The designers of these airplanes may depend on the vertical fin to provide protection. This is a poor idea, since the fin usually fails if the airplane flips onto it and provides little protection for the crew.

There is a tendency to neglect roll-over protection for two reasons. The first is convenience. Roll-over structures are heavy, tend to want to be just where you want to put other things, can restrict visibility and are generally a pain to design.

The second rationalisation is a mistaken belief the odds of flipping a plane completely over are so remote it is not worth worrying about. This last leads to unnecessarily dangerous airplanes.

I know two pilots who were saved by good roll-over protection structures. The first built a low-wing bubble-canopy airplane which had only lightweight turtle-back structure. He chose to add a strongly-reinforced bulkhead behind the seats. Several people tried to talk him out of it on the grounds it added weight and was unnecessary since the airplane was so stable on the ground the odds were infinitesimal he would ever flip over. His response was always the same: "You are probably right, but I feel more comfortable with it there". That decision saved his life.

About 18 months later he was landing at a non-controlled field. As he crossed the threshold, another pilot taxied onto the runway to take off. Neither saw the other. A collision resulted, with the descending homebuilt landing on top of the airplane which had taxied under it. My friend's aircraft tumbled and slid down the runway inverted, spinning and shedding parts in all directions. The fuselage came to rest supported by the unnecessary roll-over bulkhead. The pilot and his passenger were uninjured.

Sadly, there is another example. Just before I wrote this, we lost a friend in a nose-over on landing accident in a Sea Fury at Sun N Fun. One source has told me that the airplane had been modified to have a jump seat behind the pilot's seat. In order to make room for the extra seat, the original roll-over protection structure, which was standard on all military Sea Furies, had been removed. No doubt those who did the modification believed the possibility of a complete flip-over was remote.

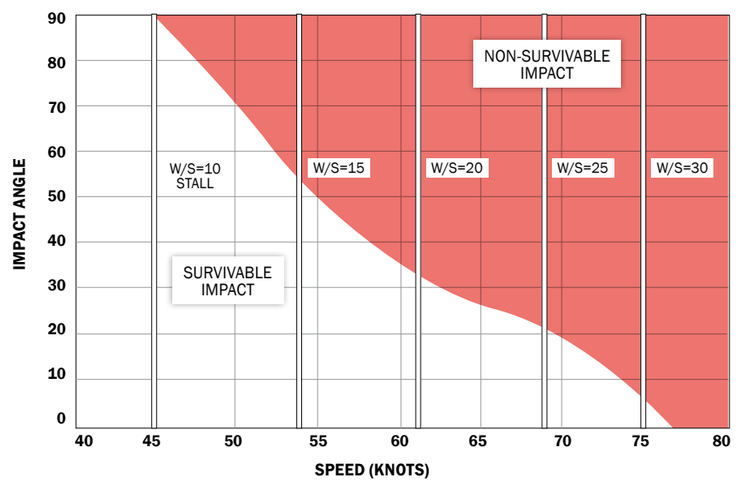


Figure 2: Crash Survivability (Stall Speed)

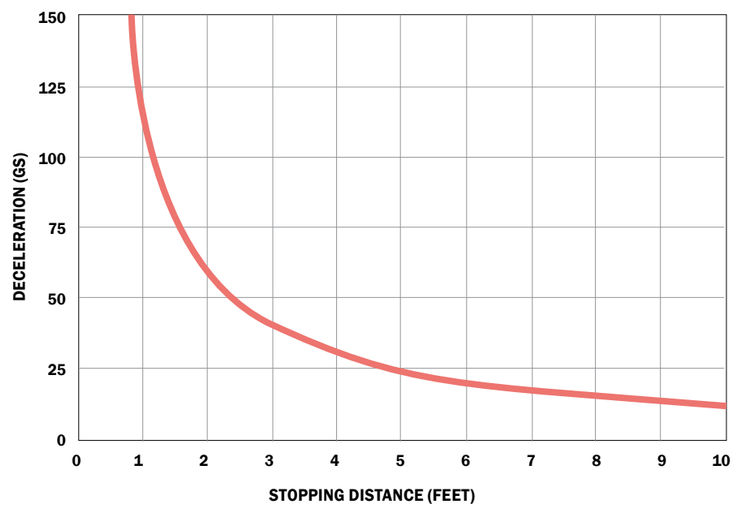


Figure 3: Stopping Distance vs G Load at 60mph

3D or not 3D

THE BEST BITS ABOUT BUILDING YOUR OWN BY DAVE EDMUNDS

FROM time to time, I come across an old aviator who says he has always navigated just using a BP road map and a thumbnail dipped in tar. He doesn't get lost much and has no time for those new-fangled gadgets. Of course his licence, if he has one, should be immediately confiscated on the grounds of a lack of comprehension of the world in which he lives (Heaven forbid I should be taken for a misogynist for the exclusive use of 'he' in place of 'he or she'. It is just that I find the later use grammatically offensive. So, 'he' generally includes all readers of all genders).

Over the past year in this column I have discussed digital control of fuel injection, digital instrumentation, digital navigation and digital construction. These are very narrow subsections of the overwhelming impact of digital technology on aviation. Of course people need to be discriminating in their use of technology, but at least that discrimination should be informed.

I was wandering through my local mall on a school-holiday Monday and came across a holiday activity that consisted of a bank of computers connected to 3D printers. It was crowded with children and their parents. As it happened, I have been learning about this technology with a couple of projects in mind. Almost weekly, the cost is coming down and the industry expanding.

I do not have an engineering or technical-drawing background, so the hurdle to overcome is the learning of appropriate software. I have been ploughing through Google Sketchup. It is free, very-well supported and cross-platform. But, as is the case with projects of this sort, the examples that are available are some distance from what I want to do and it is going to take some time to become familiar with the capabilities of the software. Unfortunately it is primarily designed for architectural use and engineering projects are doable, but not optimal. I have not found a free 3D engineering program which suites my purposes well and the commercial programs are very expensive.

I intend to buy a 3D printer, but will leave it until I am confident with the design software, by which time the price is likely to have fallen by another $100 or so to around the $500 figure for something usable.

This industry is progressing at astonishing speed. You may have seen TV items on printing titanium body parts and aircraft turbine blades. This appeared a few months ago to be at the absolute cutting edge of technology, but there is now an Australian company looking for funding to develop a metal 3D printer for a target price of $4,500. And it will print a variety of metals.

Already we can print non-structural parts in ABS for use in aircraft, or use a printer to develop a mould, from which hardware can be cast.

This is all very exciting and getting involved is initially free, but there are problems. 3D printers put a skeleton of plastic to support features that are cantilevered; otherwise the molten plastic would just drop onto the base of the printer. This means there may be considerable work involved in tidying up the model when printed. The printers do not necessarily print solids. For example, a feature such as a cylinder with a wall thickness of, say, 4mm is actually formed from an internal and external skin with a lot of fine structure supporting the skins. It may be quite strong, but is not solid and not structural. Nor will it withstand much in the way of heat.

3D printing services are available, and these may be useful, particularly if you want to print a model larger than 200mm, the limit of most of the cheaper printers.

THOSE MAGNIFICENT E-MEN?

No doubt readers will remember going to see Terry Thomas in 'Those Magnificent Men in Their Flying Machines' when it was first released in 1965 and been amused by the chicanery of some of the contestants in a competition to be the first to fly across the English Channel. You may not be surprised to find that history has repeated itself in the competition to fly an electrically-powered aircraft across the channel. Suffice to say the challenge has been met, initially by a French stunt pilot flying a Cri-Cri. He beat an Airbus contestant by a day, by apparently flying without gaining airspace clearance. A Pipistrel contestant using a Siemens engine was not allowed to compete because Siemens found that the licence to use its engine precluded it flying over water. There seems to be a very interesting story right there. The Cri-Cri also looks interesting. It is not something knocked up in someone's backyard. Check out the photos on the internet and note the very nice construction. The Airbus E-fan is a beautiful looking thing.

Efan
Photo: EADS

Cri Cri

Aircraft electric motors are structurally very simple, consisting of a ring of permanent magnets which rotate around a fixed coil, or a ring of fixed coils within which there is an armature on which permanent magnets are mounted. These are referred to as inrunners and outrunners. The major problem is that there is little or no demand for such motors. The industrial demand for a 70KW motor that turns efficiently at, say, 2,800RPM is very limited, so the possibility of finding an industrial motor appropriate to an aircraft is very small. However, the engineering is a well-known and established art.

So, enter the 3D printer.

In combination with the allied technology of CNC machining, they facilitate very small manufacturing runs, a technology well-suited to Australia, as demonstrated by Jabiru in the manufacture of its engines.

The Cri-Cri is an old design, but both the Pipistrel and the Airbus entry are aircraft designed using digital software, which produces the files required for the airframe production, and digital files used to drive CNC machines to produce other structural components. The engine is similarly designed using engineering software, and is in turn controlled digitally, while flight and performance information is also processed and displayed digitally.

This is the future of aviation. It increasingly allows us to do things inconceivable just 20 years ago, and at ever decreasing real cost.

And there is more. The dissemination and sharing of digital information is effectively free. We just need a vehicle to allow us to do it.

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August 2008 factory built. 438 hours TTIS Option 1 panel plus Microair transponder, FC-10 fuel computer, garmin 196 GPS. 10ply front and mains. Always hangared. All AD's complied with. $55000 neg. Contact 0417131816

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Nieuport 17, Good order, VW1900cc motor Series 4831. Mock machine gun cowling mounted. Popular air show participant in SE Queensland. $12,000. Phone 0428 662 528 for further details.

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EUROPA MONOWHEEL Brand new aircraft. 25 total time. Flies beautifully. 130 kts cruise @ 17 lt/hr. Rotax 912 with Airmaster AP332 propeller. Dynon Skyview panel. XCOM radio. 2K professional paint work. Selling because builder has lost medical. Test flying by RAAUS certified instructor. $85000 ono Contact Drew Done 0427316524 dj.done@bigpond.net.au

4257 MORGAN SIERRA

Morgan sierra transponder flight comp duel radio AH auto pilot long range fuel tanks ground adjustable Bolly prop. 6 cylinder Jabiru all up dates Cruse 130 kns approx. 21 ltr/hour Climb rate 1100-1200/min 6 hours endurance replacement cost $120000 plus. Reasonable offers excepted. Reluctant sale Kevin Harrison 0417808772

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Savannah VG 912 100 H.P. 600 hours. Kiev 3 blade prop, Oversized tires, XCom radio, Microair Transponder, Fuel flow meter, Odyssey Battery, Long range fuel tanks (140L), GME Epirb included $45,000. Located in Yeppoon QLD Call Tom on 0439336434

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Sparviero with 100hp rotax.Under 100hrs t.t. -- Cruise 110kts+, Fuel cap 120ltrs. Bags 30kgs. All motor ADs done.Short t/o & land (barn door flaps.) Extreme comfort. Returning to NZL reason for sale. Bargain at $80k plus GST .reg24-7801. Ph Nico 0357458250 or Geoff 0413152288

4549 TECNAM ECHO SUPER DELUXE

TECNAM ECHO SUPER DELUXE Factory Built December 2008. 950 hours. Always hangared. L2 maintained. ICOM 210 radio and Garmin transponder. Very good condition both inside and out. $92000. Contact Carla on 0438257395 or via e-mail kelmac@macsland.net

4561 AFFORDABLE FULL L2 SERVICES

A Lifetime of experience in Mechanical and Electrical Engineering. Full R.A.A L2 Services - 100 / 500 / Yearly. All engine & electrical repairs. Structural repairs - minor - major - rebuilds. Please ask for references. Working the eastern states Email: mackay777.ps@gmail.com Phone: 07 49 54 1999 after H.

4568 RANS S6S

1000hrs t/t .rotax 80hp 912 power. Cruise 90kts @4800. Very large cockpit,plenty of room.Flies beautifully.You cant beat a taildragger . Fabric with full 2 pack paint,not just a rag wing. L2 maintained.Built by fastidious lvl 2 his 3rd aircraft. Aircraft based near Wangaratta. $39500 Ph 0413152288

4573 KR2 MUSTANG

Ballistic chute, two place (77kg persons). 120 kts, 170kts VNE, new (65hrs TT) Jabiru 2200 (ser 22A3586), 60" Bolle prop (TT65hrs), Level 2 serviced Townsville. Great aircraft, great pilot fun. Spare 56" Bolle blades and spare Sweetapple prop for Jabiru 56D 52P. All $28,000 Alan Middleton 0407356948.

4577 AYRCRAFT AVIONICS - L2 MAINTENANCE - QLD

Electrical, Instrument and Radio Maintenance, Repairs & Upgrades. Based in North QLD - Happy to travel to you. CASA B2 LAME / RAA L2 Authority. Experienced on Microlights & LSA, CASA GA, RPT Fixed Wing, Multi-Engine SAR/Medivac Helicopters, and everything in between. PH: 0421727424 info@ayrcraftavionics.com.au www.ayrcraftavionics.com.au

4584 FK 9 TAILDRAGGER

FK 9 Taildragger, 100hp Rotax, 120lt fuel, 35kg Baggage Comp, Dynon D100 and Autopilot, Microair Radio and Transponder, 280hrs Airframe and engine. 2011 Factory Build. Rego: 24-8041. Mob: 0409 600 361 Email: larry5843@gmail.com $90,000 ONO.

4587 JABIRU FACTORY-BUILT 2009 J230D

2009 Factory J230D, Garmin 495, MicroAir transponder, iPad Mini, new Matco brakes, 10-ply tyres, solar battery charger, Serviced 25 hourly, TT 404hrs. Prop/cabin covers, electric tyre pump. Fantastic tourer, trip 20lph at 120 knots. Price $60K. Details: www.ivfr.net, go@ivfr.net or Thomas 0417 480 414 or Jack 0407 241 783.

4590 HANGER SHARE FOR SALE

1/6th Share in hanger at Cessnock Airport, 40 minutes from Newcastle N.S.W. Suit smaller aircraft type, e g. Jabiru, Lightwing, RV, Tecnam. $25,000 ONO. Contact Roger Foster. email r-gfoster-2@idl.net.au Phone-02 49545579 or 0407545579

4592 DRIFTER FOR SALE

Drifter .A-582 1992Total airframe hours 3724.7 Always hangared Elevator trim, rudder trim. Complete new engine blue head, 15.5 hours third radiator installed Includes VHF, UHF,Intercom, Garmin GPS, spare engine 504hrs in need of overhaul, light weight flying helmet with comms. Price: $15000 ono Contact 0407 964241 llorac@outlook.com.au

4600 HANGER SHARE: MORUYA

NSW South Coast. Light a/c hangar (approx 340 sqm) space. 1/4 share for sale. All offers considered. Deceased estate. Ph Jeff 0416283111, hanger. moruya@gmail.com

4609 WINTON SAPPHIRE

Winton Sapphire 95-10Built by scot winton andin good flying condition fitted with a Rotax 447 single carby,18 litre fuel tanks in each wing cruise@80 knots on 12 litres per hour.gross weight 250 kg,empty weight 140kg All ways hangered panel.ASI.ALT.EGT. CHT.Compass,Radio &head set. Located in central Vic Maybe able to help deliver if required 0407893314

4613 X-AIR HANUMAN

4613 Factory Built 2010, 24-7632, Total Hrs 161, Rotax 912 80HP, 75kt crz, removable wings, Mylar skins, enclosed baggage, panel mounted VHF dual channel radio, 2 headsets, dual controls w/PTT, panel mounting for Garmin 496 GPS, wheel spats, 80lts fuel, L2 maintained, always hangered Yarrawonga. $46500. 0428627408

4618 650 SUZUKI TRAIL MOTORCYCLE

For sale $29,000. Partially built Just Aircraft Highlander, tail wheel configuration with side by side seating. Build so far carried out by retired engineer to a high standard. Will suit Rotax engine. (Not included) Reluctantly selling. Phone Chris 0499 555535.

4629 AIRBORNE XT 912

FOR SALE Airborne XT912 Tundra Build Year: 2010 Total Hours: 590 Engine Hours: 590 Arrow Wing Hours: 10 Price: $43,000 Radio, Transponder, Landing, Nav & Strobe Lights, Lots of Extras Including Helmets, Bar Mitts, Covers, Hangar Trolley & Trailer 5 Year Rubber Replacement Complete 0409 295516

4634 JABIRU J 230 D

JABIRU J230D Reg 24-7419, Factory Built May 2010, Tack 300 hours, Dynon D180 EFIS, Garmin 495 GPS, Microair Radio & Transponder, Twin Strobe Lights, David Clark Headsets, Always Hangared from new. NIL damage. $77,000. Contact IAN - 0419703926

4635 JABIRU 3300 6CYL ENGINE HYD.LIFTER

Jabiru 3300 ,6 cyl.Engine complete ready to fly Only 246 hrs.Hydraulic lifters.2011 build.Has inhibitor for storage.Will ship from Latrobe Valley Airfield in factory made box if required.Asking $9500 or near offers considered.phone Michael 0409139442

4639 DRIFTER -503 - WIRE BRACED

Wire braced Drifter with new 503 from Bert Flood Imports with only 18 hrs, new Micro Air M760 radio with new Lynx headsets, new Brolga Magnum by Bolly 3 blade prop, Alt, Compass, EGTs, VSI, ASI, Skid Ball, all round good condition, $15,000. Wayne Ph 0437 108 761.

4640 SAVANNAH CLASSIC KIT VG

Savannah Classic Kit VG. Unused. Still in the box. Peter 0419 215 514

4642 XAIR-F

Engine 618 Rotax.3 blade brolga prop.E type gearbox. New skins.Inspection and new rings 50 hrs ago at Bert Floods.Fuel flow meter.VHF radio with intercom.2 headsets.Aux fuel tank.Full set of covers.Complete with trailer for transport.Can help with disassembly for trailer.Excellent to fly. troopy001@gmail.com mob 0439424478. Andrew. $15000

4648 X-AIR REG 618

X-Air 618. 260 hours TT airframe & engine. X-com radio with intercom & headsets. Condition report & bearing test by Lvl 2 LAME available on request. Always hangared & covered. Lethbridge Vic. Really good aircraft-Must sell-REDUCED TO $14,500. Call Pete on 0402 599 306

4649 AUSTER J2 ARROW

J2 Arrow Special , smallest lightest Auster1947 nil accident, Lyc 0-235, 115 hp, TBO 750, high comp. In all cyl, 18 lph, cruise at 75, stall 30, full docs and manuals, allways hangared, $35000, Gympie, 0428 459 392, 0428 184 604

4650 ROTAX 503 ENGINES (2)

Hi there fellow pilots .. As I am now back in SA I can properly advertise my hovercraft engines .. They are Rotax 503 (50hp) engines with gearboxes/electric start and exhausts ..As near as I can ascertain they have done around 50hrs Brian 0414 360 300 SOUTH AUSTRALIA $3000 stotty@sa.chariot.net.au

4651 SKYFOX CA21

Skyfox CA21 1990, approx. 600 hrs. Aeropower motor, VH and UHF radios, headsets, folding wing, new tyres and battery. Two owners only and always hangered. Cheap and easy two up flying. $23,000 Contact Brenton 0417830902.

4652 AIRBORNE EDGE 582 X

Airborne Edge 582 X. Streak 2B wing, near new. Always hangered. Engine 258 hours, cyclonic tested at 257 hours. New: water pump seals, air cleaner, jets, needles and fuel hoses. 4 blade prop., radio, intercom, 2 helmets. Extras: flying suit, mister funnel, wing cover. $12500 ono. Phone 0409 040 190 or 08 9561 5533.

4654 XT912 TUNDRA - ARROW

Airborne XT912 TUNDRA with ARROW topless wing. Converted from SST in 2012. 2000hr TBO, engine has never skipped a beat, well maintained. Includes GRS ballistic chute, tall windscreen, GARMIN 196 GPS, belly bag, headsets, helmets and intercom. Hangarage at Albion park Available. Call 0415530939 or email: lgdiscala@bigpond.com

4658 JABIRU J250

First registered Jan 2010, 198hrsTT, Vernier throttle, rudder trim, electric flaps, Low fuel indicator, fuel flow meter, strobe lights, Garmin 296, fold down seats+ rear false floor, cockpit cover and rear wheel spats, (not in photo) . Faultless mechanical history. $59,000 ONO Phone Owen, Atherton Qld 0488 600 366

4661 ROTAX 912 ULS WITH 300 HOURS TO RUN

Rotax 912ULS with 300 hours to run. All ADs and SBs completed, copies of logbook entries available. Engine runs well, maintained by L2, boxed and ready to ship. $9500 ono Call Jill on 0400 280087 or email training@temoraflighttraining.com

4665 SUPER BABY LAKES BIPLANE

Super Baby Lakes .C of A Experimental but suits LSA parameters . LYC 115 hp.TBO 1940 hrs . .Stitts polyfibre fabric and paint . burns 22 litres / hr at 65 % power . Hand start . One owner ,hangared Redcliffe ,Qld . $30000 neg . Ph 0438749213.

4666 LIGHTWING 582

Great short field take off. Blue head 582 220hrs.New bolly prop with aircraft.garmin area 500. Exterior 7/10 interior 8/10. Needs to sell have no time to use. Aircraft needs a look over before flying. Price neg. Atherton tablelands FNQ Lafras0488367937 lafras_joubert@yahoo.com

4668 BRUMBY LSA

Selling this as new Brumby. Equiped with a Dynon Flight Deck, a Garmin GPS, A Trutrack auto pilot, a Bendix King transponder, plus radio & intercom. This plane has a Jaberu 3300 motor ONLY 70 Hrs. Full maintenance history. Asking price of only $78,000 Contact me on 0269731261 or 0427001642.

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INDEX

CAGIT STILL IN BATHURST

WHERE IS CAGIT

The Come and Get it Trophy didn't move during the past month, but there are whispers itchy fingers are reaching towards it.
David Carroll of Central West Flying at Bathurst remains its most recent owner. You can talk to him on 0408 863 956 if you think you've got what it takes to seize the trophy for yourself.

For a full list of the rules about capturing the CAGIT visit raa.asn.au/events/cagit-trophy. Also Dexter Burkill's great Facebook page is also a valuable resource if you are planning a move on it. www.facebook.com/CagitHunters?ref=hl

Michael Lawrence (L) hands the trophy to its new owner David Carroll

ADVERTISERS INDEX

OFF THE SHELF

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SHOWWINGS

Take pride in being a pilot. The wings are double 24ct gold plated and are promised to never dull or tarnish. They feature three interchangeable enamel inserts (14 inserts to choose from) - 50 -150 hours, 150 -450 hours, 450 -750 hours,750 -1050 hours, 1050 + hours. Endorsements R.A.A, L.2, L.A.M.E, Instructor, Helicopter, C.P.L, P.P.L, A.T.P.L and Glider.

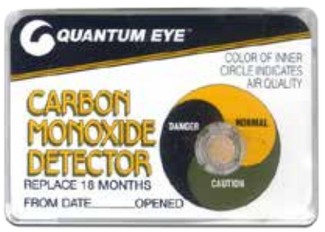
- **PRICE** $83.55 (incl 3 inserts). 10% of profit is donated to RA-Aus.
- **WEB** www.showwings.com.au

REDBIRD SIDEKICK

Redbird Flight Simulations has begun testing its new Sidekick data-collection device. It's a 2.2kg portable device which can be carried in the cabin to record flight parameters, including engine start and shutdown times, RPMs, manoeuvres flown, number of landings, airframe stresses and g-forces on landing. The battery promises eight hour duration. Redbird says when the device returns to its base station, it will automatically upload all its data for analysis. The company says it will be perfect for schools looking to keep track of busy aircraft.

- **PRICE** N/A – Expected early 2016
- **WEB** www.redbirdaviation.com

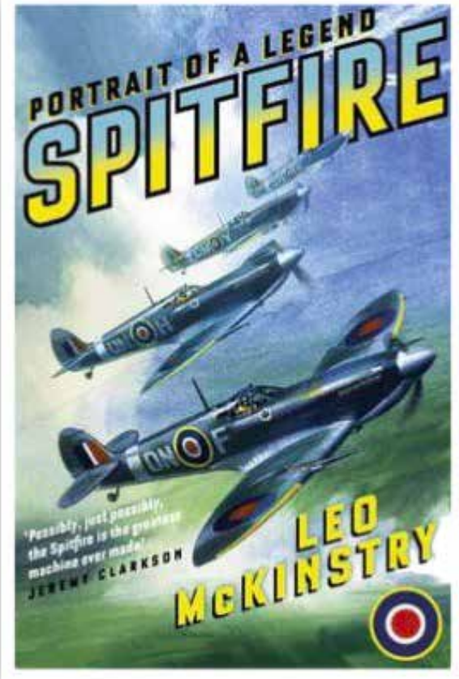
REDBIRD SIDEKICK



CARBON MONOXIDE DETECTOR

Carbon monoxide accidents are extremely rare. In the US, a study revealed only two in a ten year period. But most experts agree that many more were averted by the use of CM detectors. You don't have to replace your detector every 28 days with this device. The new Quantum Eye carbon monoxide detector offers a minimum 18 months of sensor life.

- **WEB** www.skyshop.com.au
- **PRICE** AUD$19.90



PORTRAIT OF A LEGEND - SPITFIRE

A tale full of drama, glory and tragedy. A story of the remarkable plane which played a crucial role in saving Britain during World War 2. Prize-winning historian, Leo McKinstry presents a vivid history of the Supermarine Spitfire. Compelling, comprehensive and an easy read. Softcover, 460 pages.

- **PRICE** $29.50 (plus delivery)
- **WEB** www.airsports.net

GYFTS winner goes solo

ONE of the 2015 GYFTS flight training scholarship winners, Ohram McLeod, has gone solo already.

Ohram, who trains on the NSW south coast with Sheldon Jones, had notched up 20 hours in his logbook when Sheldon stepped out of the aircraft on August 6 and asked his student to do one on his own.

Ohram described it as the greatest day of his life. “My take-off went perfectly and, for my landing, I came in a little high due to the lack of that 90 extra kilos being carried, but I got her on the ground no trouble.

“My plans for after I achieve my Certificate involve moving straight onto my PPL, going to university for aviation and then work my way up the ladder closer and closer to my ultimate goal of flying for commercial airlines. “Thank you so much again RA-Aus for the GYFTS opportunity. I am so proud to be a part of the genuine and noble corporation.”

SEND IN YOUR STORIES

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

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