

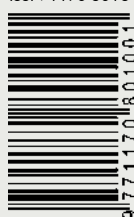
# KiwiFlyer™

Magazine of the New Zealand Aviation Community

Issue 44 2016 #1



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**Flying in a WWI Fighter Bomber  
Glasair Two Weeks to Taxi  
50<sup>th</sup> Walsh Memorial Scout Flying School**

Products, Services, News, Events, Warbirds, Recreation, Training and more.





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## From the Editor

Greetings fellow aviators. It's the season of fly-ins, competitions, and airshows at the moment and consequently this issue of KiwiFlyer contains a broad selection of event reports. These include the annual (and fast growing) Bush Pilot Champs with typically impressive photography courtesy of Gavin Conroy, the Classics of the Sky Airshow, a report on the Junior World Gliding Champs, the annual Autogyro Dannevirke Fly-in, the 50th Walsh Memorial Scout Flying School, and more. There's certainly plenty of aviation enthusiasm contained within the pages of this issue.

Spied at the autogyro fly-in, was an all-new twin cylinder two-stroke engine developed by Autoflight in Hamilton. Designed as a recreational aircraft engine using 'modern' two-stroke technology alongside some very innovative thinking, this latest creation from Neil Hintz boasts impressive specifications. We've got some teaser information for readers within the fly-in report, and will be following the project with interest.

Chris Gee has been hanging out with our Defence Forces again, this time for the return of Operation Takapu personnel and later Exercise Skytrain based on this occasion at Napier.

Last year, Tim Harrison joined the Glasair Two Weeks to Taxi programme in the U.S., and did exactly that – working with the help of factory engineers, in two weeks he assembled a Glasair Sportsman kit which is now flying in New Zealand. Tim shares his project in this issue and if you'd like to achieve the same, Tim is the person to talk to.

Our cover image is The Vintage Aviator Limited's WWI FE.2b Fighter Bomber. Lucky Gavin Conroy got to ride along as Gunner a while back. There's no question about that being a memorable experience – for example, there's no seat to sit in.

One particular feature of this issue is the number of new contributing authors. This certainly helps to keep the magazine fresh and interesting, and special thanks are due to Craig Anderson, Murray Miskelly, Alex McCaw, Lance Weller, Tim Harrison, and Savern Reweti for the excellent content they have provided. If you'd like to follow their lead, feel free to contact me.

As always, aviate safely, and enjoy your reading.

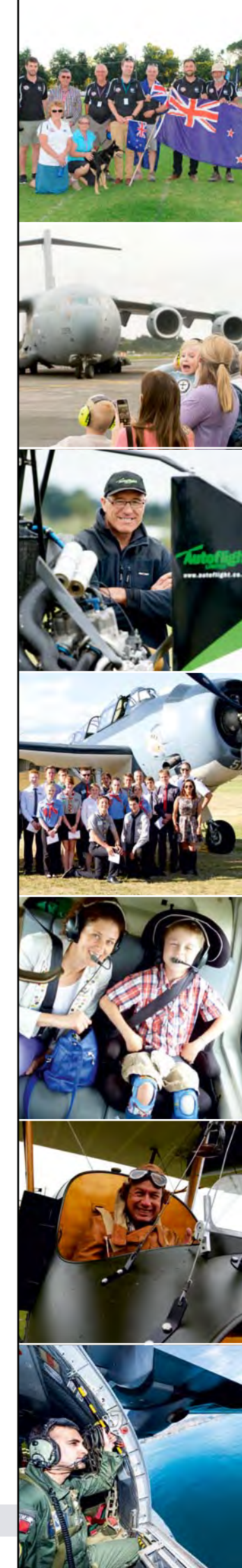
*Michael Norton*

Editor, KiwiFlyer Magazine

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**Front Cover:** The Vintage Aviator Limited's WWI FE.2b Fighter Bomber at Omaka. Gavin Conroy photograph







# Industry News Briefs

## 100<sup>th</sup> P-750 for Pacific Aerospace

Pacific Aerospace has manufactured its 100<sup>th</sup> P-750 aircraft. The P-750XSTOLIII, with extremely short take-off and landing capabilities, is their flagship model and has just been displayed at the Singapore Airshow.

Around the world the performance and reliability of the P-750XSTOL has changed the lives and living standards of hundreds of people. Through its ability to fly large payloads into and out of remote, unsealed airstrips in some of the most challenging flying conditions in the world, the P-750XSTOL performs where many other aircraft can't.

With a joint venture in place with the Beijing General Aviation Company, Pacific Aerospace is preparing for significant orders, including several multi-aircraft enquiries and is confident the 200th aircraft won't be that far away.

Pacific Aerospace global markets general manager Mark Crouch is bullish about the company's future, emphasising the P-750's credentials as a utility aircraft

for challenging flying conditions and as a skydive aircraft. "Huge geographic markets such as China, Russia, India, and Brazil are moving towards the employment of General Aviation aircraft such as the P-750 to help deliver vital connectivity from the outlying regions to the main centres. With little roading infrastructure in many of these locations, a rugged short take-off and landing (STOL) utility aircraft like the P-750 is the only means of achieving these aims. And in more developed markets, the superiority of the P-750 for skydiving purposes will continue to provide people with that bucket list thrill!" says Mark.

## CTC Aviation training pilots from 25 different nations in New Zealand

When CTC Aviation opened its Hamilton Crew Training Centre in 2005, it trained primarily UK and European airline pilots. Now, with the recent recruitment of its first-ever Kosovo citizen, the airline training organisation has 25 nationalities in training in New Zealand. With multiple international partnerships in place, students

come to Hamilton from all over the globe, including Bermuda, Ireland, India, Slovenia, Malaysia, Canada, Brunei and more.

When the Hamilton facility opened, the trainee intake into its airline pilot career programme CTC WINGS was 80 per year. Today, the number of aspiring pilots in training has reached around 400 per year.

Newest recruit, 27 year old Veton Breznica believes he is the first Kosovar citizen in history to train as a commercial pilot and has been recognised in his country for this feat. "I want to be an example to my fellow young people in Kosovo to dare to dream and will to win. Ground school and trainee life has been awesome so far, and I'm excited to continue with, and eventually complete, my training," says Veton.

Following 12 months of ground school and flight training in New Zealand, Breznica will head to CTC Aviation's UK facilities for six months of aircraft type rating training in preparation for flying as an A320 co-pilot for Qatar Airways operating from Doha.

## Beringer Aero Tail Dragger Innovation

Oceania Aviation recently hosted an NZ visit by founders and owners of Beringer Aero, Veronique and Gilbert Beringer – here as part of their company's 30th anniversary celebrations. Veronique and Gilbert made several presentations to small interest groups around the country. Beringer is a French company, now also operating in the US, which began by developing racing brakes for motorcycles. Later they became involved with carbon brake development in Formula One and then turned their attention to aircraft industry opportunities where their modern designs could improve performance and save weight compared to existing systems on offer. For example, they equip all of the Red Bull planes, saving 3 kg per plane and reducing braking distance by 40%. They now have 13 STCs for common types (with more in development) and supply numerous LSA and other light aircraft manufacturers.

Two years ago after a visit to Alaska, and with a soft spot for bush planes, Beringer decided to apply their resources to improving bush plane and tail dragger safety. At the time, they were told that a plane crashed every day in Alaska – mainly

they determined, due to the rebound characteristics of landing gear which offered no energy absorption. Beringer's solution is a new system which offers 10 inches of travel, absorbing rough terrain during taxiing (reducing G load by a factor of 3) and not rebounding on landing. The system is currently being certified for Supercubs and similar types.

Beringer have also just released an innovative replacement tailwheel design which prevents ground loops. Further safety can be had by fitting their anti-skid brake regulator which can be adjusted to facilitate maximum braking force before the tail lifts. Or when used on tricycle gear, the system prevents locking wheels and blowing tyres. For comprehensive details on all Beringer products, visit [www.beringer-aero.com](http://www.beringer-aero.com) and for local contact information see advert this page.

## Whitianga's Departure Lounge Cafe

It's busy season for special functions and the Mercury Bay Aero Club recommends checking ahead for opening hours if you're making a special trip to the popular Departure Lounge Cafe which is located at the aero club and overlooks the airfield. [www.flightclubbalroom.co.nz](http://www.flightclubbalroom.co.nz) for details.

## Flying South

A rather nice short film has been produced to showcase South Island scenery via flight in a Piper Cub. A purpose-built cinema has been created to screen it on short rotate at Christchurch Airport. Written by Jay Cassells and called Flying South, it's a fascinating work that progresses through different generations of a family, conveying their strong attachment to aviation in the process. Well worth seeing next time you're passing through.

## FAA Certification for Tecnam P2010

Tecnam has announced the Type Certification approval by the US Department of Transportation, FAA for the Tecnam P Twenty Ten.

The P Twenty Ten is the first new single engine, high wing, four-seat aircraft from Tecnam that brings together an all carbon fibre fuselage with a metal wing and stabilator. A US customer delivery centre and assembly facility has been established in Florida along with an enhanced sales and customer support network throughout North America. The aircraft has been well received by American reviewers and is expected to be instantly popular particularly with flight schools.

## ROBINSON FACTORY PILOT SAFETY COURSE

IN AUCKLAND APRIL 11<sup>th</sup> - 13<sup>th</sup> 2016

REGISTRATIONS CLOSE 18<sup>th</sup> MARCH



Heliflite Pacific Limited is holding a Robinson Factory Pilot Safety Course in New Zealand. This course will be conducted by Robinson's own Senior Check and Training Instructors, and Test Pilots, Tim Tucker & Bob Muse. The Venue is The Waipuna Hotel and Conference Centre, 58 Waipuna Road, Mt. Wellington, Auckland.

The course caters for Robinson pilots of all levels of experience and is designed to teach safe Robinson Helicopters operation and to satisfy the NZ CAA Robinson Safety Awareness Training requirements. Participants will benefit from the all-round experience and expertise offered by course presenters, Tim Tucker and Bob Muse.

Due to a recent review by the New Zealand Civil Aviation Authority, it has been established that there is a need to enhance existing training requirements. Therefore all Robinson R22, R44 & pilots are required to undergo Robinson Safety Awareness Training I.A.W. Section 21 of the Civil Aviation Act 1990.

### The Safety Course will

- Provide the latest Robinson R22/R44 Helicopter safety information.
- Educate pilots and raise awareness of safe flying and community aware flying.
- Satisfy the requirements of the NZ CAA Robinson Safety Awareness Training.

The cost of the Robinson Factory Safety Course is NZ\$955 +GST  
Contact Sarah Smith on (09) 299 9442 or email: [sarah@heliflitepacific.com](mailto:sarah@heliflitepacific.com)  
Numbers are strictly limited so don't delay - Registrations Close 18th March 2016.



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# Flight Training with PC based Simulators

*There's a sound argument to be made that properly used simulation devices can increase the quality of training, allowing exercises to be effortlessly stopped and replayed, and also allowing 'extreme' events to be simulated which would never normally be experienced in a live training situation. Despite this, FTD use in New Zealand isn't as high as you might expect, recently prompting Massey University to offer a new two-day short course on FTD introduction (see sidebar at right).*

*20 years ago, simulation devices for flight training were designed with customised components and complicated proprietary software. They were expensive. There has since been a steady increase in the availability of PC based training devices using low-cost off-the-shelf hardware and software. Some flight training organisations have used this opportunity to undertake in-house development of a Flight Training Device (FTD) for their students. Many have been certified for training use by NZCAA, reducing the minimum 'flying' hours required by students to achieve a qualification and thus reducing training costs.*

*However, those who thought Microsoft's Flight Simulator was a failsafe choice of software platform may well have been surprised when Microsoft discontinued further development of the product. Other options exist fortunately, including for migration, and these as well as the further potential of FTD use in New Zealand, are discussed in the following research paper by Dr. Savern Reweti of Massey University's School of Aviation.*

## Is Microsoft Flight Simulator X (FSX) finally coming to an end?

It certainly was a challenge developing a CAANZ certified low-cost motion-based (2 degrees-of-freedom) Diamond DA 40 glass-cockpit flight simulator. This research device was an integral component of my thesis to test the viability of low cost PC based Training Devices (PCATDs) for effective pilot training.

PCATDs are comprised of three main components: PCATD software, flight controls and instrument display, and a personal computer. The availability of inexpensive but sophisticated software packages such as Microsoft Flight Simulator and X-Planes, combined with low cost PC-compatible technologies has accelerated the development of PCATDs.

Due to budget constraints, I chose Microsoft FSX as the software engine for the Diamond DA 40 PCATD, for a number of important reasons. This software had a long and successful franchise history. It is hard to believe that Version 1.0 was released way back in 1982, and Version 7.0 (FS2000) in 1999. At that point, almost 21 million copies of the software had been sold. This would be quickly surpassed by the two most popular titles, Version 9.0 (FS2004) and Version 10 (FSX), released in 2006. FSX has a vast internet library of third party freeware and payware aircraft available. This included a number of Diamond DA 40 aircraft models I could evaluate for use in my PCATD. There was also a large inventory of inexpensive NZ scenery developed for FSX by NZ developers. However, for small local airfields and VFR reporting points, I had to dust off the software tools and develop my own customised scenery. FSX also had a number of other features that were critical for the PCATD project including an instructor station mode, dynamic weather, improved graphics, advanced animations, and a software development kit.

Unfortunately, due to global financial difficulties, Microsoft Corporation closed down its FSX Development Studio in 2009 and further development was discontinued, although the



Dr. Savern Reweti with students in Massey University School of Aviation's Diamond DA 40 Simulator which he developed as part of his PhD research.

original product is still available at online retailers. There was a considerable backlash from the aviation training community after this announcement. At least three hundred companies worldwide had developed a plethora of software and hardware products to enhance FSX as well as an enormous amount of freeware had been produced by dedicated amateurs. Without continued support from Microsoft, my fellow developers and I wondered how long the FSX software could remain viable. Remarkably, in 2016 it seems that the original FSX, although somewhat battered, has survived the last seven years but it is clear that it is quickly becoming unsustainable. The reason for its decline is due to the tremendous advances in PC hardware and software in the last few years. FSX was coded for single processor PCs built in 2006, and therefore cannot access the power of multi-core processors found in current PCs. Some software updates did allow FSX limited multi-core support but it did not markedly improve performance. Many an aviation student has been shocked to find his brand new multi-core PC, slowed to a crawl when running FSX on full graphic detail settings. Another major problem was compatibility issues with the new Windows 8.1 and Windows 10 operating systems.

Even more disconcerting is that FSX can only access a limited amount of virtual address memory space (VAS) even though you may have large amounts of RAM installed in your PC. This was not a major issue in the past as there were very few memory intensive third party software packages available. Now you can download a wide range of high-definition photoreal scenery packages, integrated weather and upgraded textures programs and complex aircraft panels and systems. With multiple add-ons installed in FSX, the VAS memory eventually overflows and freezes the computer. What is frustrating is that this usually happens after a long flight and on final approach.

## What options are there?

Many aviation students who use FSX for informal training have been enquiring as to what could be a suitable replacement. The good news is that there are several software packages being continually updated that are compatible with the new software

operating systems and fully utilise the power of multi-core processor PCs:

**1. X Planes (v111.0)** is an ultra-realistic flight-simulator software package. Many student pilots gave high ratings to the flight-modelling engine, which is based on blade element theory. X Planes does not suffer as much from VAS problems like FSX. However, it does have a smaller range of compatible third party software. ([www.x-plane.com](http://www.x-plane.com)).

**2. Prepar3D (Version 3.1).** Lockheed Martin purchased the Microsoft FSX source code in 2009, and continued to make substantial improvements to the software. However, Prepar3D objects are incompatible with FSX and you have to use their migration tool to convert existing FSX aircraft and scenery to the new Prepar3D format. Prepar3D has finally solved the VAS problem. ([www.prepar3d.com](http://www.prepar3d.com)).

**3. Microsoft Flight Simulator X: Steam Edition.** In 2014, Dovetail Games also purchased the rights from Microsoft to continue the development of the original FSX. Their Steam Edition is available as an internet download and the original software has been markedly improved. It is more stable with better graphics and frame rates. However, some add-on software packages require modification to run correctly. (<http://store.steampowered.com/app/314160/>).

**4. Next Generation Flight Simulator.** This new software may leave FSX and its variants far behind. Although still under development we do know it uses the powerful UniGine v2 graphic software engine and a host of new technologies. This new concept will offer aviation students unprecedented levels of graphic realism ([www.nexgenflightsim.com](http://www.nexgenflightsim.com)).

## PCATDs in Flying Schools

The tremendous advances in processing power, the development of realistic flight controls, and the increasing number of add-on software packages, have transformed PC based systems into effective flight training tools. These systems, in some cases, exceed the processing power of full flight simulators built in the 80s and 90s. It was inevitable that flight training schools began to focus on the training potential of these devices.

In the USA, the Federal Aviation Administration considered the lack of fidelity, task limitations, and the lack of substantive research as significant barriers in authorising PCATD activity in FAA approved aviation training schools.

However, after much debate and significant pressure from flight schools the FAA issued an Advisory Circular, AC61-126 in May 1997 which allowed for the limited use of PCATDs and formally recognised the potential of these devices for use in general aviation instrument training. The Australian Civil Aviation Safety Authority (CASA) released a similar document after considerable consultation in 2006, which outlined the standards and requirements for approved synthetic flight training devices. CAANZ have adopted these standards for approval of synthetic flight training devices coupled with additional requirements that are unique to the NZ aviation-training environment.

PCATDs have now become viable tools for presenting realistic, high-resolution, and full-size graphic displays of aircraft instruments. These devices can also provide precise aerodynamic modelling, weather generation, system failures, and accurate depiction of high-resolution terrain. PCATDs can use a variety of low to medium fidelity input devices such as joysticks, throttles, generic knobs and switches, and realistic yoke/rudder pedal combinations. However, PCATDs usually have low fidelity in the areas of cockpit layout, and flight control force-feedback. Despite these limitations, a number of studies have indicated that there is a positive transfer of learning when utilising PCATDs, and they do offer an affordable and effective alternative for aviation training, compared to more costly FTDs.

## PCATD use within New Zealand FTOs

As part of my thesis, I conducted an in-depth survey of forty flight-training organisations (FTOs) operating in NZ. Thirteen (32.5%) FTOs were utilising CAANZ certified PCATDs. Only nine (22.5%) of the FTOs were using CAANZ certified Part Task Trainers. Twenty-one of the FTOs indicated that they were aware that their aviation students were using Microsoft Flight Simulator, X Planes, or Flight Gear software, usually coupled with basic flight controls for informal part-task training purposes. However, these devices were not part of the formal training curriculum and some flight instructors were concerned about their unsupervised use and possible negative training transfer. Therefore, there are still many FTOs and pilot trainees who could benefit by the formal introduction of relatively low cost PCATDs into their flight training programmes.



SCHOOL OF AVIATION

## PCATD AVIATION TRAINING COURSE UNDER DEVELOPMENT AT MASSEY UNIVERSITY SCHOOL OF AVIATION

For those interested parties involved in PCATD aviation training, a two-day short course is under development, which addresses the issues of PCATD development and acquisition, and their formal use for pilot training in NZ. Some of the areas that the course curriculum may address are:

- The challenges and requirements to develop your own PCATD and achieve CAANZ certification
- How to write a Synthetic Trainer Operations Manual
- How to use PCATD software development tools (e.g. terrain, flight modelling)
- How to choose a suitable PCATD for their training requirements
- How to introduce a PCATD into the formal flight-training programme
- How to utilise a PCATD more effectively for classroom instruction
- How to manage a PCATD for effective solo rehearsal by aviation students
- How to use a PCATD effectively for pre-training assessment
- Evaluate new PCATD software and hardware technologies and future developments

For expressions of interest in attending this course in the future or any relevant questions or comments please contact **Anke Smith - [aviation@massey.ac.nz](mailto:aviation@massey.ac.nz)**







# Corrosion Control NZ expands presence throughout Australasia

*Corrosion is an insidious process, often not noticed until damage has been done. Even diligent owners who maintain their aircraft in spotless condition are likely to receive unwelcome surprises at major check or overhaul time.*

*When the Engineer says "no it's beyond corrosion limits", it's much too late to wish you'd adopted a formal corrosion protection programme a year or two previously.*

*With an expanding Australasian network of representatives, Corrosion Control NZ Ltd. has quickly become a major solution provider in this field.*

SINCE 2013 Corrosion Control NZ Limited has been the exclusive authorised importer and distributor for all CorrosionX products into New Zealand and Australia. Owned and operated by Tom Muller and Lilly Vedana, the Whangarei based company has invested significantly in its distribution network, achieving substantial sales growth for CorrosionX in these markets over the last three years. They now distribute around two tonnes of the product every month and have just commenced a new operation to aerosolise the product locally from bulk supply.

Tom says that since taking over the CorrosionX distributorship, a vast amount of effort has gone towards improving customer service. "Our current retailers and regional distributors are experienced, reliable companies, many of whom are registered Defence Force suppliers. Retailers and distributors are supported by a dedicated NZ Head Office, and we in turn enjoy 100% back-up from the USA manufacturer. With this network in place, no customer is too big or too small. Urgent orders can be easily coped with and enquiries will always be quickly answered."

## Benefits of CorrosionX

Most commonly, CorrosionX is fogged and applied inside aircraft structures as part of a corrosion protection program. Tom says the product stops electrolysis and corrosion and can also be applied over wet and already corroded surfaces, as well as being safe to 39,000 volts and non-aggressive to rubber, neoprene, monofilament, electronics, modern anodising and plastics. It's

also non-toxic and non-flammable (aerosol cans excepted) and considered to be very cost efficient per square metre and per month in terms of durability.

Another benefit for CorrosionX users is the documentation and information that Corrosion Control NZ can supply for the product – including SDS sheets, specific application advice, and everything that may be required to ensure compliance with WorkSafe and aviation regulations.

## Users of CorrosionX

CorrosionX meets current military specification, is NZ MPI approved as Class C11 and is fully aviation approved. Tom says the product is used and endorsed by numerous major aviation brands including American Eurocopter, Cessna

Aircraft, Boeing Helicopters and many more.

A significant Australian customer is the RAAF who Tom says are either already using or working towards approvals to use CorrosionX within protection regimes across various aircraft types; "The South Australia based Orions now have the outside of their fuselage coated with CorrosionX, and internal approvals are in progress for the Hornet fleet to utilise the well-proven method of fogging various areas of the aircraft with a commercial spray unit - developed and distributed by Corrosion Control NZ Ltd."

Many aircraft are protected by CorrosionX in New Zealand, via private operators, maintenance organisations, and approved product applicators. One regular user and licenced applicator of CorrosionX is Neil Morris of Aviation Ltd. in Wellington. A Licenced Aircraft Maintenance Engineer, Neil has numerous aircraft under his care and has treated around 15 of them with CorrosionX since he started using the product 18 months ago. Neil says that when inspecting aircraft (particularly as part of the Cessna SIDs programme), it is always easy to tell which aircraft have been corrosion treated in the past and which haven't – particularly also where internal surfaces of the aircraft haven't received a coat of primer during manufacture. Using equipment that mists CorrosionX in order that it spreads everywhere throughout internal



Right: CorrosionX demand has grown to the point where aerosolising many product lines in NZ by Bream Aerosol Packaging Ltd in Waiuku has become viable, also reducing transit times, increasing supply flexibility, and of course retaining more of the product value chain within NZ. Roger Woodman, MD of Bream Aerosol Packaging and Tom Muller (right) shake hands over the recent partnership.  
Left: An RAAF Orion is 'mopped down' with CorrosionX as part of its corrosion prevention programme. Internal approvals are in progress for CorrosionX utilisation within the RAAF Hornet fleet.



structures, Neil typically treats the wings, fuselage and under-floor areas every 12-18 months. He says the product is very suited to spraying over existing oxidation that is within allowable limits, then effectively arresting that corrosion which of course is inspected again in due course as a part of the aircraft's maintenance programme.

There is also widespread use of CorrosionX outside of the aviation industry, with other NZ clients including the aquaculture industry, crane operators, meat processors, the NZ Navy, Northpower, NIWA, the Coastguard, ship yards, various regional councils and a large client base in the agricultural and engineering market.

## Join the Team

Tom is keen to see a continued expansion of the CorrosionX presence in Australasia and welcomes enquiries from companies who may wish to join the team as authorised distributor. "Local market

knowledge and word of mouth advertising based on customer satisfaction simply works best. As approved distributors rather than parallel importers, we care very much for the brand and the relationships we build with our dealers and customers. Product and information will always be available in a fast and friendly manner," says Tom.

## For more information

CorrosionX stockists and applicators can be found via [www.corrosionx.org](http://www.corrosionx.org) or [www.corrosionx.com.au](http://www.corrosionx.com.au) or by contacting Tom at Corrosion Control NZ Ltd. on 09 438 8800 or 021 469972. Tom says they maintain substantial stock holdings at Whangarei so "supply should never be an issue". Corrosion Control NZ also distribute large variety of products for the concrete and road building industry including dust-control products, acid free truck cleaners, and non-stick coatings for concrete truck owners, road builders and scaffolding companies.



[WWW.CORROSIONX.ORG](http://WWW.CORROSIONX.ORG)

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# Flying in a WWI Fighter Bomber

I WAS in Masterton to photograph one of The Vintage Aviator Limited's (TVAL) Albatros D.Va fighters a while back. Following that we flew with a few other aircraft and towards the end of the day I received an invitation to fly in the world's only airworthy FE.2b Fighter Bomber. Flown for the first time at the beginning of 2009, this aircraft was built using many original parts, most notably a beautiful and rare Beardmore engine. When it was originally announced that TVAL were building a FE.2b enthusiasts around the world were amazed and dusted off many books to learn more about this aircraft. It was very impressive for its time but not as well read as the Sopwith Camel, Fokker Triplane, etc.

The FE.2b (Farman Experimental) started life as a fighter. Although it was big it could pack a punch with its two machine guns and when hunting in packs the aircraft was very effective. German Ace Max Immelman was killed during a dogfight with this type and Manfred Von Richthofen received a serious head wound following an attack on a formation of these aircraft so it could hold its own - but as the war went on more superior fighters began to take their toll on the aging FE.2b. The aircraft was withdrawn from front line service in 1917 but continued to fly until the end of the war as a night bomber and could also fill other roles including photographing troop movements etc.

Building the FE.2b was of course a significant project for TVAL. Project Manager and test pilot Gene De Marco says, "As a pilot, watching an aircraft like this grow from the single first part to an amazing work of art, it becomes a part of you. You remember each stage of construction, each problem, every area to be concerned with, but most of all you get a complete understanding of this particular machine".

The FE.2b is a peculiar looking aircraft in so many ways. One can gaze at the aircraft for hours on end due to its complex make up and sheer size. It looks similar to the Airco DH2 but is over twice as big, carries a crew of two, is powered by a 1000 cubic inch engine and weighs around 3000 pounds. It is an intimidating aircraft with a wingspan stretching to nearly 50ft (49' 7"), which is barely more than two feet shorter than a Cessna Grand Caravan.

It has three sets of struts supporting each wing as well as two more pairs connecting from the top wing to the fuselage, as well as wires running every which way along the wings and rear fuselage. The pilot sits in the rear seat and the gunner in the front in a stepped configuration - a seating arrangement now seen in many modern day attack helicopters. The gunner has access to two drum fed Lewis machine guns. The gun at the front covers the arc immediately in front around to the leading edge of the wings and can be fired through vertical arcs as well. It has spring clips dispersed around the front nacelle that allows this gun to be moved into different positions. The fixed rear gun is mounted higher so it can be fired rearwards over the wings. The guns were made from scratch by TVAL.

## Preparing for flight

We approach the aircraft and Gene takes his time to complete a thorough pre-flight inspection. Gene said, "As you approach this aircraft you become aware of its size and presence, it's like no other First World War aircraft I have been close to". He checks everything thoroughly and due to the size, some parts are easier to inspect than others. I am 5 foot 8 tall and can walk under the horizontal tail without ducking! On the other hand, a ladder is needed to inspect the control surfaces and other moving parts on the top wing, as these are 13 feet above the ground.

Gene checks the four massive rear tail booms to make sure they are fit for flight along with many other hinges, cables, pulleys etc. The 26 hand formed struts must all be checked for structural integrity. On the underside, the complex oleo system must be checked for leaks, 750mm wheels and tyres inspected, along with the wind driven fuel pressure system. Although these are modern times, the old pilot's notes, aircraft and engine manuals must be followed. The power plant also needs a thorough look over. The Beardmore engine puts out 160 hp and weighs more than 600 lbs, without the radiator and that weighs 90 lbs. It is checked for leaks etc. before and after every flight. TVAL have recreated a real masterpiece here. Gene said, "The engine is a work of art in itself,



FE.2b Fighter Bomber. The Gunner at the front has to make do without a seat.

a sturdy cast aluminium crankcase sprouting six very large copper jacketed cylinders." There is a lot more to check than what has been listed here, I would think a Boeing 747 pre-flight is probably quicker!

Once the inspection is completed we 'climb aboard'. This saying is used a lot but you do need a ladder with at least seven steps to get into this monster. As I hop in I notice that there is basically nothing in the front cockpit, not even a seat. If you want to sit down, that is what the floor is for. All the crewmember needed was access to the guns and ammunition. At the rear is a small cabinet where extra ammunition is stored. The seating position affords an excellent view for both occupants but there is a serious flaw and this is that the pilot cannot see directly behind at any time so voice communication between pilot and ground handlers during start up is crucial as is communication between gunner and pilot in flight. Most attacks on the FE.2b were likely from the rear due to limited protection.



Hardly surprising that Pilot Gene De Marco enjoys his job.

## Engine start

Gene calls "contact" and a few seconds later it gets quite noisy as the engine starts and begins to settle down. The big straight six engine sounds like it means business and its only idling. The ground crew inspect the engine one last time before we taxi out, as Gene will not be able to see if there are any engine issues during the flight. Even the airflow driven fuel pressure system is underneath the aircraft so total trust is required. We slowly make our way out to the runway; it has a good solid tailskid instead of brakes so care is needed while the aircraft is moving about on the ground. The smell of castor oil is all around us and that alone makes this experience quite unique and such a privilege. Gene lines up the big bird and everything is going very smoothly. He opens the throttle wide yet only 1300 rpm registers.

The aircraft has a very good oleo suspension set up so it rumbles across the ground with ease. The engine pushes the FE.2b down



That's the deflector bag (for spent cartridges) flapping at the Gunner.

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the runway and soon the 3000 lbs of man and machine are in the air and what a thrill it is to be flying in this priceless piece of history. We climb to around 500 ft, which takes a while; the aircraft climbs at 300 feet per minute. We level off at 1250 rpm and maintain a speed of 70-75 mph. Staring straight into the wind is quite exciting but not as bad as I had expected due to the fan being behind us instead of in front. The engine noise is loud, sounding very angry but running smoothly. Surprisingly we can still speak to each other in flight. Gene flies a couple of orbits. Obviously very little angle of bank is applied in such a big aeroplane, and turns are very gentle. A pilot could throw it around if required but the speed would bleed off quickly. During WWI the life and death struggle meant the aircraft were flown hard but crews would still have had to respect the aircraft.



The 1000 cubic inch Beardman engine. In itself, a work of art.

#### Taking the Gunner's place

It was time to stand up in to relive what the gunners had to endure. From the front seat looking forward there is basically nothing but the machine gun to obstruct ones view. A strap is connected from me to the floor and standing up needs to be done slowly as the airflow increases the more upright you stand. Finally I

cautiously look about and in a minute or two am quite comfortable. The aircraft is so stable that the crew would have felt safe flying this lumbering giant. But those brave young aviators would have had a torrid time trying to bring guns to bear accurately. Not only that but their entire body from the knees up is basically outside of

the aeroplane so sure footing is required. Our flight was during spring so flying conditions are comfortable and I can only imagine how tough it would have been to be standing in an open cockpit at 10,000 feet in the middle of winter trying to shoot down the enemy - and I find myself learning to respect these past aviators in so many other ways. They had to fight the enemy and conditions. It must have been unbearable compared to today's aircraft. Firing the gun directly forward is ok but turning

the gun at right angles to the oncoming airflow makes it harder to control, and at times it feels like the gun wants to slam me in the face. Then there's the Mk II deflector bag doing its best to interrupt my aim by flapping all over the place. The deflector bag collects spent rounds and is crucial as without it the cartridges would easily hit the crew or fly into the propeller and possibly damage the airframe in flight. Don't forget too that when the drums run out on the machine guns they need to be changed. Spares were carried in

the front cockpit but changing these drums was not easy. It would have been very easy to accidentally let a drum go and take out the pilot or propeller, especially when the gunner is under pressure due to being fired at by the enemy.

We descend into the circuit and it's an unusual experience as we seem to be heading down steeply for a few seconds but the aeroplane is going no faster, so diving away from the enemy would not have been an option. Gene has also bought the power back to 1050 rpm and I can hear the wind rushing over the entire aircraft as we settle on the downwind leg. Gene guides us onto finals and the touchdown is very smooth thanks to a combination of Gene's flying ability and the complex oleo suspension. We taxi in, shut the engine down, and wheels are chocked. I am visually shaking and my ears are ringing following the 15 minute flight. The shaking was due to the excitement, emotion and adrenalin; it was an amazing flight and such a privilege. That shaking continued for a good 30 minutes afterwards, not something I've experienced before.

#### Extending the legacy

TVAL have taken all of those dreams people have had regarding what it was like to fly aircraft like this and turned them into reality.

Today's pilots can pass their own stories and experiences onto the admiring air show crowds and give them an idea of what those brave pilots and crew must have had to endure. As I exit the aircraft I'm surrounded by at least six other rare WWI aircraft that can be only seen here in New Zealand. In years gone by WWI Aviation



The FE.2b's wingspan is a mighty 49 feet, 7 inches.

buffs had to travel to places like the UK where the Shuttleworth Collection is based to see so many WWI aircraft in one place and Masterton is definitely right up not only in terms of the number of aircraft on hand, but also the incredible attention to detail. In the past if we have wanted to know what it is like to fly in these aircraft we have had to read books written by pilots and often these books describe the fight to win and don't touch on the enjoyment of flight - as that was not a consideration during the Great War. Thanks

to TVAL people can now experience the thrill of flying in aircraft like the FE.2b and share the experiences with others. I feel very privileged to have flown in this aircraft and been one of those people who can now describe what it was like. My thanks to The Vintage Aviator Limited and especially Gene De Marco for providing this unique opportunity.

Gavin Conroy

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**KiwiFlyer**



## Aviation Insurance Explanation of Terms

*Insurance policies have a number of terms and definitions that may not always be fully understood. Bill Beard from Avsure explains:*

### Hull Insurance

This is the main component of an aircraft policy. The hull insurance is intended to provide payment towards the cost of repairing or replacing an aircraft that has been damaged. Most policies protect the aircraft on an "all risk" basis, meaning that the aircraft is covered against any cause of loss unless specifically excluded. Excluded items typically include things like mechanical breakdown, ordinary wear and tear and loss of use. You can buy coverage while the aircraft is on the ground, taxiing and in flight.

### Aircraft Liability Coverage

This is the other major element of an Aircraft Hull and Liability Policy. Liability coverage protects those who are covered by the policy against action brought by others who claim that they have suffered injury or that their property has been damaged in relation to the insured aircraft. In New Zealand personal injury and death claims fall under ACC legislation.

### Named Insured

This is the actual policyholder(s) specifically named on the policy. Named insureds are responsible for premium payment, and have the authority to cancel or make changes to a policy.

### Additional Assureds

Are persons or entities other than the policyholder, who are covered under the provisions of the policy. Additional insureds are given the same protection under the policy that the policyholder is. It should be noted that the 'limit of liability' is the maximum that the insurance company will pay to settle a claim. In other words, say three entities are each 'additional insureds' on the policy in an action, the 'liability limit' of the policy will be split among the individuals.

### Private, Pleasure and Business Uses

Private Pleasure and Business aircraft insurance is coverage for non-professional, non-commercial aircraft. In other words, general aviation aircraft, flown by the owner or authorised pilot, operated for pleasure or non-aviation business use but specifically not for hire, or rental or compensation. This means that you cannot make a charge for the use of your airplane or helicopter.

### Open Pilot Warranty

A clause in the insurance policy that lays out the requirements for pilots who fly the aircraft other than those specifically named in the policy and is usually subject to the pilot meeting minimum qualifications and flying experience requirements.

### Subrogation

A legal doctrine under which your insurance company attempts, in your name, to recover money it has paid under your policy due to the fault or actions of a third party. In aviation insurance, the most common example of this is physical damage to your aircraft caused by a third party, such as a maintenance provider.

### Waiver of Subrogation

A promise, in advance, by you and your insurer not to try to recover damages from a party who causes damage to your aircraft. Waivers of this sort can be found in hangar agreements, and are sometimes requested by Instructors or Professional Pilots who will be providing you with pilot services.

*To discuss this topic or any other questions relating to aviation insurance or to seek quotations, contact Bill Beard on 0800 322 206.*

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# Angel Flight New Zealand - 4 years on

On 23rd November 2011, Lance Weller incorporated Angel Flight New Zealand as a charitable organisation with the aim of "Improving lives one flight at a time" by flying qualifying patients to far-away hospitals for non-emergency appointments free of charge. The charity has existed in Australia since 2003. Lance says after moving to New Zealand he was initially disappointed to find that the charity wasn't operating here as he had seen first-hand "how wonderful it was to help people in strife". Angel Flight is not an air ambulance or emergency service and doesn't have any medical capability on board so all patients must be fit to fly and have been recommended by a health professional. They must also be in financial need. Lance says the aim is to complement existing emergency air medical services. Pilot time and aircraft operating costs are donated by the pilots and owners involved. Four years after setting up the charity in New Zealand, KiwiFlyer asked Lance how they are getting on. Very well is the answer, as Lance reports:



Joseph and Mum Erica flew by Bell LongRanger on an Angel Flight to Dargaville. Most Angel Flight aircraft are fixed wings. Needless to say Joseph was very excited by the trip.

fly off our pilots and means we can offer a reliable service to our passengers.

From just me in 2011 we have grown to now have 64 pilots and aircraft across NZ, 87 Earth Angels and 5 Mission Coordinators for a total volunteer team of 156 people. We have flown 86 Adults and

33 Children 27,558 km and our Earth Angels have driven 4,492 km.

Our objective is "Improving Lives one flight at a time" by flying eligible rural passengers to their medical appointments at major city hospitals free of charge. All flights whether flown by Air NZ or ourselves are met by one of our Earth Angels who drives our passenger to their appointment and afterwards back to the airport. Most passengers are flown home the same day.

All our passengers are very appreciative of our service as they avoid the stress of a 5 or 6

hour road journey in each direction plus an overnight stay. Children with serious illnesses such as cancer all seem to enjoy the experience of a flight which is usually their first aviation experience - and it takes their minds away from their illness.

A Mission Coordinator is appointed to manage each mission. Their important role is to coordinate the passenger, pilot, Earth Angel and appointment Doctor so all are kept informed about any changes to the mission schedule. The Mission Coordinator emails all pilots with details of the mission, passengers, weights, dates, airports, etc. Pilots only respond to the email if they wish to fly that

particular mission. Thus there's absolutely no pressure on pilots to respond to a mission request. And once a pilot is assigned a mission they may cancel the mission at any time due to weather, aircraft malfunction, etc.

## Mission Highlights

Some highlight missions thus far have been:

Pilot Brent Hempel flying Joseph aged 7 years and his mother back to Dargaville in his helicopter. Joseph's school had arranged for his name to be spelled out on the school oval by his fellow class students standing in the shape of his name. This was a very special sight as the helicopter flew over the school.

Pilot Roger Dickie flew a 91 year old gentleman who was a World War II, DFC decorated, Pathfinder Lancaster Bomber Pilot from Taupo to Paraparaumu.

Pilot Stuart Clumpas flew our longest mission departing Ardmore in his twin engine Cessna to Kerikeri to pick up a gentleman with an inoperable brain tumour and fly him to his family in Masterton. This was a 1336 km round trip back to Ardmore.

## Thanks to

There are a lot of people and organisations who contribute. We have received financial support from Rotary International, AON Aviation Brokers, Fonterra and many individuals. MetService have provided commercial weather services free to our pilots. Airways have provided funds for charts and Airways waive their enroute IFR charges for our flights. And we are appreciative that two Flying Schools, Nelson Aviation College and Ardmore Flying School have supplied pilots and aircraft at no charge to fly our missions. We have received great support from many airports across NZ who have waived their landing fees for our Angel Flights. They include Kaitiaki, Kerikeri, Whangarei, Dargaville, North Shore, Ardmore, Whitianga, Hamilton, Tauranga, Whakatane, Taupo, Napier, Gisborne, Palmerston North, Paraparaumu, Masterton, Wellington, Nelson, Christchurch and Wanaka. Contact will be made with other Airports as we fly into them for the first time.

We also have an agreement with NZ Red Cross that they will provide various forms of assistance to us across NZ. And we have agreements that if a city airport becomes unusable due to an earthquake etc., that we will contact our pilots to fly in emergency personnel to small nearby airfields.

## Volunteers sought

We are looking for pilots in New Plymouth, Paraparaumu, Masterton, Dunedin, Invercargill, Wanaka and the West Coast who are willing to donate 5 to 10 hours of their time and aircraft per year. We require our pilots to have 250 Hrs PIC, current BFR and Medical.

Angel Flight NZ supplies free of charge a white collar shirt and Cap both fitted with our Logo to all pilots and Earth Angels after their first flight or drive.

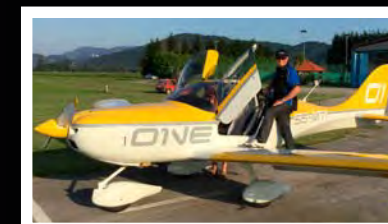
We welcome new recruits to the cause and I look forward to more pilots joining our team. For more information, please visit: [www.angelflightnz.co.nz](http://www.angelflightnz.co.nz)

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# Walsh Memorial Scout Flying School

## An Instructor's View

*Named to commemorate pioneer NZ aviators Leo and Vivian Walsh and held at Matamata since its inception, the Walsh Memorial Scout Flying School has just celebrated its 50th Anniversary.*

*The school began in January 1967 when the Scout Association of New Zealand held the first Venturer Scout Flying School. The school was the idea of the late George Arkley, a National Scout Commissioner and member of the Royal Aeronautical Society (RAeS). With the success of the first school, the NZ Division of the RAeS offered (through NZ Aeronautical Trusts Limited – a Trust Company funded and controlled by the Division) to provide a financial subsidy and the services of members to assist in maintaining the professional standards of the school.*

**I GUESS** we are all masochists at heart. I mean who else in their right mind would fight for annual leave in the middle of January each year to forsake family, friends and stunning beach paradises, to instead take up residence on a paddock in the middle of the Waikato and work hard teaching kids to fly?

Like an illicit drug the lure of the Walsh is hard to explain to someone who has not previously been a member of the Walsh community. Over a period of 24 hours the culmination of months of meticulous planning spring into action and what was a relatively quiet grass strip gets transformed into the busiest airfield in the country, hosting the most concentrated flying school of its kind.

To enable this process, the Walsh Memorial Scout Flying School calls on a team of highly skilled instructors from throughout the country, and beyond, and from all different facets of the aviation

spectrum. Most of the team have attended previously, so arriving back at Matamata airfield feels like coming home, and the continual process of greeting old friends and reconnecting with what each has accomplished in the preceding 50 weeks lasts well into the first night on camp.

Predominantly the instructor team is assembled from 'B' Category instructors, with a few 'C' Category who get the opportunity, and a handful of 'A' Category and Flight Testing Officers. As many of the instructing staff are not teaching full-time, the first few days are hectic with type currency flights, self currency flights, and instructor renewal flights.

While in this article I'm explaining the operational side of the School, the main focus of the Walsh is to instil an excitement with aviation into the hearts and minds of teenagers from a number of youth organisations across New Zealand. While the staff are greeting each other with hearty

*Still run by SCOUTS NZ, the school does give preference to Scout and Guide enrolments up until the end of August each year, with remaining places after then open to anyone. As you'll infer from this article, the School is a wonderful institution and a shining credit to those who continue to maintain and contribute towards it.*

*Long-time Walsh participant Murray Miskelly kindly agreed to pen an article about this year's School for KiwiFlyer readers. Murray started his own aviation career as a student at the School in the early '80s, and at the 2016 School was presented with an award for 25 years instructing service to the Walsh. He currently lives in Kerikeri where he instructs at the local aero club, and flies with the Coastguard Air Patrol.*

handshakes, beaming smiles and hugs, carloads of nervous children are being delivered by parents to start a journey that they do not realise will change them for life.

For many this may be the first time they have been away from family for a two-week period and they will have to learn to make all their own decisions for themselves. For most this will be the hardest thing they have done, with early morning work details, continual lessons – both theory and practical, and mounting peer pressure to succeed as the School builds to its finale in the last few days. For all this will be a defining moment in their lives as they will leave the School with new skills, new confidence, and a wide range of opportunities in the aviation industry.

The 2016 School comprised of 44 ab initio, 18 second year, and 12 third or fourth year students. This totalled 74 young pilots each requiring individual coaching. While the first years all follow the same

syllabus, each of the returned students are at different stages in their training and each require a bespoke training plan to achieve their goals.

To efficiently run a school with this number of ab initio students requires a structured timetable and a well organised teaching framework. Students are divided into four 'Flights' which are led by returned students. Each flight is allocated a team of instructors who are assigned with three to four members from the flight, covering both first year and returned students.

In addition to the students and instructors, each flight is allocated a fleet of four aircraft. Currently these are a mix of Cessna 152s and Piper Tomahawks sourced from the wider aviation community. When you add a couple of spare training aircraft and the six instructor-owned aircraft, the daily booking sheet lists a fleet of 24 aircraft. From the second operational day of the School onwards the instructors will juggle students, aircraft and bookings to ensure all facets of the training syllabus are covered in a timely manner that will let all ab initio students progress at a rate that corresponds with the ground lessons.

The theory side of the training is conducted in a 'mass briefing' format. On arrival at the School the team of instructors eagerly(?) look at the briefing schedule to see which of the main lesson briefings they have been allocated. While the instructors have many years of experience, and a vast wealth of knowledge, many of them are now employed with the airlines and beyond, and so teaching a class of nearly 50 students, as well as an array of the other instructors, can be a daunting proposition. The Walsh School has assembled a curriculum of materials to be delivered by data projector and PowerPoint, and during the School those instructors assigned a mass briefing find time slots to reacquaint themselves with the teaching materials, and

**Captions 1:** Crack of dawn starts provided perfect flying conditions. **2:** Air NZ provides some of the major awards to the school. Jackson Murray, Mikayla Hoff, Alyse Johnson, Callum Mowat, Shannon Crene, Isabella Allan, and Shand Maisey receive awards from Captain David Morgan, AirNZ Chief Flight Operations and Safety Officer. **3:** The author leads members of Flight 1 in initial pre-flight training. **4:** LAC Brandon Jeffcoat, and Corporal Ben Ryan from the RNZAF Rescue Fire Service conduct lessons. **5:** After the School's graduation ceremony Flight One assembles in front of the Grumman Avenger. **6:** Air Nelson Captain Steve Scott conducts a mass briefing consisting of nearly 50 students. **7:** The supreme award of the evening – The Walsh Trophy – was presented to Shannon Crene by Captain David Morgan, David Saunders from the Royal Aeronautical Society, and John Mounce from NZ Aeronautical Trusts.



1



2



3



4



5



6





7



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the skills to deal with a class this large.

The flying programme starts daily at 6am (weather permitting), and from then until ECT it is rare to have more than a couple of the fleet on the ground at one time. To cope with a fleet of 16 aircraft efficiently, the booking sheet is devised so half the fleet start on the hour, and the remainder start on the half hour. In addition, the airspace gets divided into quarters, so that the instructors from each flight work in an allocated training area that is relatively clear of other aircraft. Ideally it leads to two aircraft in a training area for the bulk of the lesson, with a period of transition where the second brace of aircraft arrive.

For the duration of the School the airspace is designated as a control zone with a full complement of Airways Controllers manning a mobile control tower to maintain efficient and safe traffic movements. Even though this change is properly promulgated via NOTAMs and other methods we regularly get itinerant and transiting aircraft who break through the airspace and, being unaware of the event, are usually on a different frequency, if they are monitoring a radio at all.

By the start of the second week the new students are completing the upper air part of the syllabus and remain in the vicinity of the airfield for the circuit training lessons. This is where the circuit tends to get a wee bit busy, and the Airways Controllers are made fully aware that this is not a holiday camp. It is not uncommon to have twelve in the air 'circuit bashing'. Personally I have sat at the holding point for the main vector and seen five light aircraft lined up on finals. To cope with this volume of

movements the main vector at Matamata gets split into three (left, centre, and right). While simultaneous parallel operations are not permitted, reduced separations on the parallel vectors enable a high density of movements. During the 2016 School the peak was 1,300+ movements in a single day.

Once students start getting close to solo standard restrictions are placed on the number of aircraft in the circuit. This provides good opportunity for the returned students to move out into the training areas to complete their individual syllabi.

With all this training the instructing team need a tight rein on consistency and completion. Each flight has an allocated 'Flight Commander', one of the senior experienced instructors to oversee this. Through monitoring and team briefings a cohesive standard is maintained in the student body training, and any student having difficulty maintaining the pace of progression is flagged, and given additional resources to get them 'back on track'.

Official flying activity ceases at ECT, when the students retire for self study, duties at running the camp itself, or the occasional visits off-site to let off steam. It is now that the instructors have a chance to relax and interact themselves. Staff accommodation ranges from a handful of block units, through to campervans, caravans, tents and even a horse float. Such salubrious quarters become the venues for cocktail parties, barbecues and even a progressive dinner, staged with all the trimmings that are available. Do not let a simple lifestyle get confused with frugality. For nights when no organised social events are scheduled, a few 'friendlies' in the instructors' bar provide the catalyst

to conversations on all manner of topics flying related.

To complete the training syllabus, the ab initios sit a theory exam on all the subjects presented through the duration of the camp. In addition to the flight training materials this covers meteorology, principles of flight, aircraft technical knowledge, air law, and rescue fire and emergency systems. Final cramming for the exam involves each flight holding review sessions with the allocated flight instructors to ensure a thorough understanding of all content.

So when you consider the workload for the instructors, the daily early starts, the time and effort to work with multiple students in a condensed timeframe, and the fact that all of this is taking part on a glorified paddock where most facilities are transient, there must be a reason that instructors return time and time again. For many the excitement of adding another 40 hours teaching in their logbook isn't too important, so it comes down to the camaraderie, the social interaction with like-minded individuals, and the satisfaction of sitting back at the final day's graduation parade, and seeing the continual stream of your protégés step up to receive their recognition and awards after attaining such high standards of ability and knowledge. There are few institutions that can manifest such a change in personality and demeanour in two weeks, and Walsh is definitely one of them.

So when I get asked what I have been doing for the previous 50 weeks of the year, my answer is invariable, "recovering from the last Walsh".

Murray Miskelly

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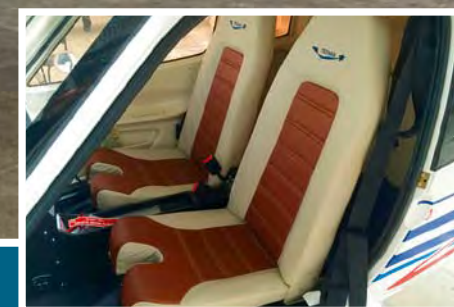
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# 'Two Weeks to Taxi'

## My experience building a Glasair Sportsman

Tim Harrison and his company Sports Aircraft New Zealand are familiar names to Kiwi recreational aviators. Based at Kaipara Flats Airfield north of Auckland, Tim represents a very interesting stable of brands that include Zlin, Flight Design, The Airplane Factory (Sling), and Glasair.

**BEING** a purveyor of Light Sport aircraft I'm always on the lookout for the latest creation to hit the marketplace. One such aircraft which stands out from the crowd is Glasair's Merlin project. Well one thing led to another and I discovered that their previous successful GlaStar had evolved into the Sportsman. The Sportsman has been offered as a kit aircraft since 2003 and recently Glasair have come up with an innovative way of enabling potential customers to get flying with a minimum of time and expertise. Their program is aptly called 'Two Weeks to Taxi' and involves two weeks of total immersion into a minutely controlled build program.

I had been looking for a replacement for the very capable Avions Robin R3000 I had owned and then sold a few years back. The Sportsman ticked all of the boxes and some more; I was hooked.

The adventure started almost a year ago now on Saturday 14th March as I boarded NZ84 bound for Vancouver. I had selected an aisle seat and as the doors closed I could not believe my luck as the two adjoining passengers had failed to make the flight, I went into high protect mode to fend off any pirates looking to steal my new found property, the flight being virtually full. This was a good omen for the coming weeks. Arrival Vancouver was a breeze and once rested and in possession of my super cheap rental car I set off for Arlington, Washington state. Border crossing into the US was the usual 'over the top' interrogation. The border agent had trouble with "the purpose of your visit, sir..." "to build an aircraft in two weeks". He even tried the trap of "you must think I'm stupid" to

Last year, Tim spent two weeks at the Glasair factory building a Sportsman as a participant in their very well polished 'Two Weeks to Taxi' programme. Building your own plane helped by factory engineers is a fascinating concept so we asked Tim to write about his experience for KiwiFlyer readers.



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which I replied "you must be very clever to have been selected to be a border agent". One hour later and six dollars lighter I was on my way.

Glasair have a good deal arranged with a decent hotel in Arlington, so once checked in I went for a quick explore to get orientated with the local area. Breakfast is included in the room rate so the following morning, fuelled up, I was ready to set off for my 7am report. The factory is situated at the Arlington municipal airport and was just a short 15 minute drive from the hotel.

### Arriving at Glasair

On arrival I was met by Harry Delong, Glasair Sales Manager. It was good to finally meet the person whom I had been dealing with via email and phone over the previous few months. Harry soon had me at ease and after a

whistle stop tour of the facility I was introduced to Ben Rauk and his team in the build hangar. This was to be my home for the next two weeks. Ben explained the basic rules of the build shop and then we went through the program which he had drawn up for me. This was also set out in a work-book which I had received a few weeks previous, together with the build manual copied onto a CD. I had transferred the manual onto my iPad and had spent many hours reading up what was to be expected of me. The workbook pages were all pinned up on a board so that all could see my programme and were able to sign off my completed tasks. An hour and a half after start time I was straight into the build program.

The Glasair team is made up of nearly all recently qualified A & P mechanics; most are cutting their teeth on their first job before

moving on to something bigger and better, namely a company called Boeing.

The build/assembly process is one in which you are mentored in every task and this makes for an incredibly efficient use of labour time. The other big advantage of the system is that some of the work has already been completed, so the starting point is presented as a 'fast build' kit at commencement. For each task all the tools and associated components are to hand and usually the mentoring person has specialist knowledge of the particular procedure to be completed.

For instance the basic wing structure exists and the preparation and installation of components takes place with military precision. Drilling holes, routing fuel and vent lines, installing cable guides/bearings/bell-cranks/cable assemblies etc etc. Next, fuel tanks (two per wing) and all the associated hardware are installed so at the end of the day there are very nearly two complete wings, just leaving top skins to be riveted in place and wing tips to be attached and wired.

This level of achievement carries on for eleven working days with one day off in the middle. What does one do on the day off? Drive down to Everett of course and take a guided tour of the Boeing factory, totally awesome!

### Day Twelve: Start Your Engine

On day twelve and getting close to exhaustion it's time to get the adrenalin pumping, engine start and taxi trials. In the early afternoon the weather was being kind as we rolled my new creation out of the hangar. With ten gallons of fuel in the tanks I slid into the left hand seat and worked through the engine start check list. Looking outside I was a little concerned to see one of the team with the biggest fire extinguisher I'd seen in a long time - oh

well nothing for it but to prime up and press the starter. I kid you not, the engine fired up on the third turn and spluttered into life with rather a lot of oil smoke evident; obviously well prepared on the internals! Soon she settled down and we were able to set off on our 20 minute taxi checks, 'Two Weeks to Taxi' achieved.

Later that weekend I spent a couple of nights with a cousin on Salt Spring Island, just out from Vancouver and then set off on the long flight home.

### To New Zealand

The Sportsman was handed over to the painters before being crated and container shipped to New Zealand. She arrived at the beginning of July and four weeks later I was in possession of an 'airworthiness certificate for flight testing'. The first flight took place on 1st August, lasting 45 minutes; the smile on my face lasting much longer. The experience of education and sheer accomplishment has been one of the best of my life and I would thoroughly recommend this type of programme to anyone who has the desire and drive to create their own aircraft.

### Epilogue

Well it's now six months since the first flight and I still have that big smile on my face whenever I get to fly SPZ. The CAA requirements of 40 hours test flying has been completed and I'm now in possession of a full Amateur build Certificate of Airworthiness.

Only a few items surfaced during the test flying. The first was the aileron rigging which needed some adjustment to get the stick central for level flight. After about ten hours an oil leak appeared at the front of the engine. Oh dear, this looked serious, but a couple of hours with Aviation Power Supply at Ardmore soon solved the problem. The front seal on the crankshaft had not been seated correctly at original assembly and with some expert work we soon had things back to how they should be. The fuel pressure sender also started playing up at the same time. Our first action there was to put it on a test rig and following a good clean through the little bleed hole, the problem was solved.

The best help I had throughout the whole process was from the SAA (Sport Aircraft Association). From designing a maintenance program for the aircraft all the way through to a test flying schedule, all of this was invaluable. The CAA, well they played their part in extracting large amounts of money.

So in conclusion; I gained a huge amount of knowledge and further skills from the whole experience together with a great deal of satisfaction and pleasure at having created a very capable aircraft. Would I do it again? Yes.

### For more information

Contact Tim Harrison on 09 423 9494 or [info@sportsaircraftnz.com](mailto:info@sportsaircraftnz.com) [www.sportsaircraftnz.com](http://www.sportsaircraftnz.com)



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# Bush Pilot Champs 2016

Attracting a record number of entries, the 4th annual Healthy Bastards Bush Pilot Champs was held at the start of February in Omapa. Sponsored by the Bulls Flying Doctor Service, Sounds Air, and Simply Avionics, the event is justly billed as 'New Zealand's premier national STOL and Precision Landing competition'. Craig Anderson reports:

AS my mate Nigel Griffith has said on many occasions, "AvGas is evil, and must be burned". Many of the competitors at this years Healthy Bastards competition have clearly heard Nigel's warnings, judging by the amount of practice some of them put in prior to the event. People are taking this very seriously which for me as an organiser is great to see. While it is exciting to see the extremely short take-offs and landings many pilots were achieving, for me personally, I get warm fuzzies from watching over 200 take-offs, approaches and

landings all beautifully executed, in very challenging conditions. To watch a 100-hour pilot fly a perfectly stabilised approach in gusty crosswind conditions, and land within 10 metres of the line is what the event is all about. And we saw that time and time again, all day.

A record number of pilots flew on the day, and a marked difference this year was the number of high time pilots competing. Out of the 62 that entered, 12 had over 10,000 hours. Three pilots had under 100 hours. The average hours for each competitor was over 4500! The enthusiasm of everyone who attended was infectious, and made for a great day out for everyone involved. Gustly conditions provided exciting entertainment for the several hundred spectators, and also for some extremely short numbers as can be seen below. Full results are available of the Marlborough Aero Club website: [www.marlboroughaeroclub.co.nz](http://www.marlboroughaeroclub.co.nz)



Jonathan Batson on the brakes in the 260 hp Bearhawk.



Jim Benbow in one of the best presented Piper Super Cubs you will see.

## 2016 Healthy Bastards Bush Pilot Champs Results

STOL (Microlight)					STOL (Heavy Touring)						
	Take-off	Landing				Take-off	Landing				
1 <sup>st</sup>	Bruce Clulow	13.1m	29.0m	ZK-PBC	Carbon Cub	1 <sup>st</sup>	Scott Madsen	48.1m	33.0m	ZK-BMW	C180B
2 <sup>nd</sup>	Jock Struthers	17.6m	29.6m	ZK-ZMX	Zenith CH701	2 <sup>nd</sup>	Willie Sage	38.5m	50.4m	ZK-MTP	Maule M6-235
3 <sup>rd</sup>	Chris Anderson	13.8m	39.0m	ZK-TIA	Zenith CH701	3 <sup>rd</sup>	Peter Blake	42.5 m	54.1m	ZK-BYC	FU24-300
STOL (Light Touring)					Precision Landing						
	Take-off	Landing					Landing				
1 <sup>st</sup>	Craig Anderson	31.0m	49.1m	ZK-BSH	PA22/20-180	1 <sup>st</sup>	Russell Young	0.6m	ZK-SNE	PA28-180	
2 <sup>nd</sup>	Innes Bint	37.4m	43.5m	ZK-BVJ	PA18-150	2 <sup>nd</sup>	Bruce Clulow	0.9m	ZK-PDC	Carbon Cub	
3 <sup>rd</sup>	Ryan Southam	31.0m	51.6m	ZK-ERB	PA18-160	3 <sup>rd</sup>	Dan Thompson	1.6m	ZK-FHQ	PA28-181	



Ivor Yockney out practicing on the evening before the event. It was a stunning sunset!



Commentators Steve Scott, Nigel Griffith, and Craig Anderson were in fine form, keeping the crowd interested all day long!



Bruce Clulow won the microlight STOL section in this Carbon Cub.



Innes Bint took part in his recently restored (and stunning) Piper Cub.



Sounds Air took some lucky passengers for a flight around the local area.



Peter Anderson showing some attitude in his Piper Pawnee.



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# The end of Operation Takapu

ON THE evening of the 9th of December, after a journey of over 15,000 km, two aircraft rendezvoused above Whenuapai Airbase, under an overcast Auckland sky. NZ4205, an RNZAF P-3K2 Orion, and ZZ176, an RAF C-17 Globemaster III, landed and disgorged their weary passengers to the delight of their welcoming families. The event marked the end of a 16 month deployment to the middle east for RNZAF's 5 Sqn. The P-3K2 Orion, flown by Flight Lieutenant Phil Brock, had a mammoth journey from the UAE to Diego Garcia, then onto Perth, across Australia to Richmond, and finally over the Tasman to Whenuapai. Meanwhile the RAF C-17, carrying personnel and freight, flew directly via Perth.

'Operation Takapu' saw 53 personnel at a time operating out of a base in the United Arab Emirates as part of New Zealand's contribution to the Combined Maritime Force (CMF), an international Maritime Security partnership consisting of 30 nations. The deployment was the longest 5 Sqn had carried out since WWII, and over the course of the deployment 306 personnel and five aircraft were rotated through the operation. The area of operations covered over 4 million square kilometres of international waters, with the aim of defeating and preventing piracy against international shipping as well as contributing to regional maritime security and anti-terrorism operations.

The deployment was highly successful with 174 sorties flown over 1400 hours in the air, and only 3 missions missed due to the aircraft being unavailable. This is an astounding availability rate for a lone forward deployed aircraft, with the RNZAF being the sole Orion operator in the CMF. This has, according to Major General Tim Gall "...set the standard by which the rest of the Air Force will be judged". The RNZAF is considered to be well ahead of the curve, and amongst the world's leading P-3 operators.



The RNZAF P3K2 Orion and HMNZS Te Kaha found over 118kg of heroin aboard the dhow, indistinguishable from innocent fishing vessels.

Some of the highlights of Operation Takapu for the RNZAF included participation in some very important drug smuggling busts. On 12 June 2015, following intelligence from the 5 Sqn P-3K2 Orion, the Royal Navy's HMS Richmond tracked and

then attempted to board a Dhow. Bad weather and rough seas meant the mission had to be aborted. The CMF then assigned the Royal New Zealand Navy's HMNZS Te Kaha to complete the task, and early on the 13th of June RNZN sailors boarded the Dhow and discovered 118 kg of heroin. Earlier, on Oct 2014, the RNZAF P-3K2 Orion guided the Royal Australian Navy's HMAS Toowoomba to a suspect ship off the coast of Somalia, which was found to be smuggling 600 kg of hashish, with a street value of \$360m.

## Technology on board

The RNZAF's Orions have been upgraded to P-3K2 standard, and this greatly increased capability was seen as a game-changer in the aircraft's role with the CMF. The new radar, an Elta EL/M 2022A[V]3, is capable of detecting small targets on the surface and in the air and from a long-range stand off distance. This multi-mode radar includes many sophisticated modes for tracking and identifying targets in a maritime or overland surface environment, including Inverse Synthetic Aperture Radar (ISAR), Classification Synthetic Aperture Radar (CSAR), Range Signature (RS), Spot Synthetic Aperture Radar (SSAR) and Ground Moving Target Indicator (GMTI), while the Air-to-Air mode allows the tracking of airborne targets. The radar is integrated with an APX-114 Identification Friend or Foe (IFF) interrogator. The glass cockpit is integrated to a new Universal Flight Management System and Electronic Flight Instrumentation Displays, as well as digital navigation radio aids and dual air data computers. A Traffic Collision Avoidance System has been installed, along with two LN-



Waiting families were thankful for the hearing protection they had been provided with as the RAF C-17 Globemaster III taxied past.

100G INS/GPS guidance systems. A Wescam MX-20 is mounted on a stabilised turret under the nose. This day/night capable imaging suite contains a thermal infrared radiation (IR) sensor, a wide field of view (EOW) colour video sensor, and a narrow-field of view (EON) monochromatic sensor for long range target identification. The ergonomic integration of these all these systems into the 'TACRAIL' workstations, together with a sophisticated 'surround sound' internal communications system has led to a significant reduction in workload for the aircrew, allowing more attention to be given to situational awareness and mission tasks.

## Into the future

The last aircraft to operate this mission, NZ4205, is about to celebrate its 50th birthday, an incredible length of service by any standards. A major headache now exists for the New Zealand Government, as they decide how to replace the venerable P3 Orion. It is commonly said that 'the only way to replace an Orion, is with another Orion', which is quite a credit to a design that started out its life as a 1950s commercial airliner. There are a number of options on the table, none of which include the possibility of new-build Orions. The strongest contender is the Boeing P8 Poseidon, a highly modified 737 Airliner, also purchased by the Australians. The RAAF will also be operating the RQ-4 Triton UAV, a huge 737 sized unmanned aircraft that can loiter an extremely long time and cover

large swathes of ocean. This is an immensely expensive proposition that would almost certainly forbid a one for one replacement of our aircraft. Another good contender is the Kawasaki P1. The Japanese manufactured their own P3 Orions and this is a jet powered alternative, which best matches the range, altitude efficiency and capabilities we possess in our current aircraft, at an obviously greater cost. Interestingly, the P1 is the only production aircraft in the world that uses a 'fly-by-light' system of optical control, making the aircrafts controls impervious to electromagnetic interference, which can be a problem for any platform carrying the amount of high energy emitters needed for this role. Unfortunately the USA, which is trying to sell us its own platform, will likely block the sale of P1s to NZ despite recent changes to Japanese legislation allowing such a sale.

Another approach is a two-tier system, where a smaller number of the high-end systems mentioned above are backed up by a smaller aircraft such as the EADS C295. It is also a possibility that the wide range of missions carried out by the six P3K2s currently in service are spread out amongst different dedicated aircraft, for example US-2's for the Maritime Search & Rescue Role, alongside separate ASW and MPA versions of the C295. Whichever approach is taken, it will be expensive, but New Zealand's area of responsibility covers 1/5th of the world's surface, so the role is deserving of appropriate political and public support.



After the journey of over 15000 km the RAF C-17 and RNZAF P3K2 arrived at Whenuapai just minutes apart.

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# Skytrain 2016

ON January 16th the RNZAF descended upon Hawke's Bay to hold a major training exercise, its first in the region for a decade.

Exercise Skytrain 2016 saw two C-130H (NZ) Hercules, along with a French CASA CN-235 deployed to Napier Airport for 12 days of intense operational training. As well as training for the delivery by air of goods essential for the NZDF's Humanitarian Aid and Disaster Relief (HADR) mission, simulated low level resupply of troops on the ground under threat was carried out, along with many of the aircrew achieving their first Tactical Low Level Flight ratings. Due to the threat level being simulated all the flying training was carried out in full tactical gear, including body armour, and night flying was undertaken with lights off and Night Vision Goggles in use.

A self-sufficient deployment, Skytrain included a large camp set up to the south of the airport. Each crew rotation flew one or two times per day, with around six operational flights carried out each

day. 180 NZDF personnel were deployed, with the aircrew from 40 Sqn backed up by Maintenance, Safety and Surface technicians, Force Protection security, Catering and Medical units along with Military Intelligence and Communications support. The RNZAF was joined by elements from the New Zealand Army Logistics

Regiment, including 21st Supply Company, 10th Transport Company and Engineers, and 5th Movements Company.

The French Air Force joined in with one of their Noumea based CASA CN-235 aircraft, supported by 11 personnel, who joined the exercise early to assist in transporting material down from Whenuapai. RNZAF have a strong relationship with the French Air Force, both working together to master their delivery of HADR effects - with the Noumea CN-235s likely to be responding alongside our

C-130s in the case of any emergency.

Selected media were invited to join a training flight to observe an airdrop of both high and low velocity CDS (Containerised Delivery System) pallets from an RNZAF C-130. This flight started with a Tactical Take Off, using minimum runway. The acceleration was intense, sending one of the unprepared cameramen flying. From



(FLTLT) Liesl Franklin commands her C-130H (NZ) over the Hawke's Bay region.



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Napier the aircraft headed south east, flying low through the Tukituki Valley and around Te Mata Peak, before the run-in to the first drop on the 'Mana' drop-zone, near Rissington, one of many spread throughout Hawke's Bay over the duration of the exercise. The first drop was aborted at the last second due to the aircraft being outside its speed envelope for release, which saw the Loadmasters rapidly re-secure the pallet as the aircraft relocated itself for a second attempt. This time, after first a 1 minute, then 5 second warning, the light turned green and the Loadmaster cut the white strap holding the pallet in place. The high velocity CDS quickly sped down the tilted fuselage of the climbing aircraft and exited the aircraft, pulled by its chute out into the air. Although not visible from within the aircraft, it was learnt later that the load landed 80 metres to the left of target. That's a pretty good result considering that the Calculated Air Release Point (CARP) is worked out manually under training circumstances. The second drop of the flight was of two low-velocity CDS pellets launched together. With its loads dispensed with the aircraft continued north east out over the coast for more training before heading back to Napier. This particular flight was lead by Flight Lieutenant (FLTLT) Liesl Franklin, with her crew consisting of Co Pilot FLTLT Tim Lesley, Navigator Flying Officer (FGOFF) Adam Palmer, Air Engineer Flight Sergeant (F/S) Ross Wilcock, Air Loadmaster Sergeant (SGT) Mike Taylor and Air Loadmaster Corporal (CPL) Dave Snowdon.

### Current and future technology

All of the RNZAF's C-130Hs have undergone significant upgrades as part of the 'Life Extension Program' (LEP). A new glass cockpit with moving map display and modern Flight Management System is installed, along with an APN-241 Radar with Ground Mapping capability, an Upgraded Radar Altimeter, a new Traffic Collision Avoidance System (TCAS II), and an Enhanced Ground Proximity Warning System (EGPWS) for terrain avoidance. Needless to say that aircrews are highly appreciative of the result.

The CDS system is standardised system of dropping Fuel, Stores, food and supplies across a multitude of scenarios. It was this system that a 40 Sqn C-130 Hercules, still in testing at the time, used to resupply the stricken Russian ship MV Sparta in the



CDS Pallets are dropped with precision at low level from the C-130 (R. MacKenzie NZDF)

Antarctica with supplies, comms and a new pump on 17 Dec 2012. The Hercules is capable of carrying and airdropping 37000 lbs spread over 16 CDS Pallets. Despite precision airdrops being such an integral part of most operational scenarios, the NZDF does not possess a precision guided airdrop capability such as the 'JPADS' type system that is common to our allies. Perhaps this capability will be addressed as part of the acquisition process to replace the Hercules, which came into RNZAF service in 1965 and will last until 2020. The replacement decision should be made soon, with many options on the table, including one hugely expensive Boeing C-17 which is still available, the last single available example anywhere. Most probably a multi tier approach will prevail, with a low-end capacity aircraft such as the EADS C295 or Alenia C27 operated in combination with higher capacity Embraer KC390 or Airbus A400M aircraft. New build C-130Js, a greatly superior Hercules variant, are also an option under consideration.

On January 23rd an Open Day was held for the public, with hundreds of people touring through the C-130s, which were joined by NH-90 and A109 Helicopters. Community engagement was a necessity, with the low level and 'lights-off' night flying requiring the locals be educated and made aware about what all the noise and ruckus was about. The NZDF aims to hold the Skytrain exercise as an annual event. If you're lucky the next one might be in your town.



The French Airforce CN-235 low level over the coast. (R. MacKenzie NZDF)



Go! The Loadmaster cuts the white strap...



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## Places to Go: Invercargill

Invercargill is the gateway to many beautiful destinations in Southland, such as Riverton, Catlins and Stewart Island. It is my preferred city for shopping and the hospitality of the people is second to none.

Flying into Invercargill is the most straight forward control zone, I have found, with just 10 Air NZ daily flights - so great practice for new pilots and those who don't fly too often. If you have difficulty with the flat landscape to find reporting points, then call a few miles before the zone at an easy landmark and state your intentions. Once you have made contact, the tower tends to vector you in on a direct course. If coming in from a westerly direction keep an extra eye out, as there is a training area just outside of the zone near Riverton.

There is parking outside the aeroclub on the tarmac and BP fuel is available.

There are several rental car options in the terminal or the city is a 5 minute taxi ride. With beautiful surrounds, staying a few days and renting a car would be a good option.

The city is popular as a conference venue, so booking accommodation ahead is a good idea. There is plenty to choose from including the Quest serviced apartments right in town, starting at \$129 per couple (0800 944 400). Staying there means you're close to the popular shopping streets. My favourite is Esk Street, which has lovely clothing shops, quirky cafes and a large emphasis on the pedestrian experience rather than a car thoroughfare.

The main streets were named in the 1850s by chief Surveyor John Thompson after Scottish rivers. Inver is a Gaelic name for 'a river mouth' and the city was named after the founder of the Otago Province, William Cargill. Initial sections were sold in 1857 and a hospital built in 1861. That same year Southland separated from the Otago Province and boom times continued until 1863 in part due to the Wakatipu gold rush.

Railway lines were started to Winton and Bluff but with the gold rush over, Southland was heavily in debt and returned to the Otago Province in 1870. The Government of the day promoted immigration with many people from Scotland arriving and a reason why Southlanders still roll their 'r's.

The water tower, constructed out of 300,000 bricks in 1888, remains as one of the cities main landmarks even today. The 1890s saw a rise in the farming industry with many dairy factories and freezing works



The famous signpost at Bluff, a 20 minute drive away from Invercargill.



Dee Street in Invercargill. All of the main streets were named after Scottish rivers.



The Bluff Oyster Fest is held every year in May, a superb excuse to visit and mingle with fun people.



Riverton Harbour has the appearance of a traditional seaside village.



Mitchell's Bay at Riverton.

opening. The aluminum smelter was built in 1971, boosting the population to 47,000. Tim Shadbolt, the current Mayor and a well-known political radical, first came into office in 1992. His enthusiastic public relations put pay to Invercargill's conservative image and put the city on the map.

Invercargill is a city of many firsts. Local engineer, Herbert Pither, claimed to make the first powered flight in the world on 5 July 1910, flying for 1 mile along Oreti Beach. This long firm sand beach was also home for car and motorcycle races for decades and was home base for the motorcycle legend, Burt Munro. A visit to E. Hayes & Sons' shop is a must-do, not only for every engineering tooling requirement, but for the displays of Burt's motor cycles, including his winning machine that broke the land speed record at Bonneville, USA in 1967.

The Burt Munro Challenge, which is held annually in November, was created by the Southland Motorcycle Club after the success of the Burt Munro movie in 2005. It is now the largest motorcycle rally in NZ.

Another first was the zero fees scheme for study. This radical idea was put into place in the late 1990s, drawing funds from the Council, community and (liquor) licensing trust. The scheme worked much better than anticipated because it attracted older people who moved their families into the city. Now the Southern Institute of Technology has 5 campuses.

While in the city, plan a visit to Southland Museum, home to over 80 Tuatara. Our 'living dinosaurs' are now extinct on the North and South Island and have become iconic to the Invercargill region.

A wonderful day or overnight trip to Riverton is highly recommended because of the region's beauty and appearance of a traditional NZ seaside holiday village. The main street bustles with an interesting variety of shops and the beach is simply stunning. Kings Fish Shop on Ythan Street is a also a must visit for fish lovers.

Bluff town itself is a 20 minute drive and was the very first town settled by Europeans (first visited in 1813), making it our oldest town in NZ. The Bluff oyster festival is held every year in May and is a superb event for mingling with the lively locals and enjoying some renowned southern hospitality.

Put this great place at the top of your places to go list. Then next time you hear someone mention Invercargill, you can say you've been and loved it.



# Good Aeros Gone Bad

IT IS very easy to be upbeat about the joy, freedom and fun of aerobatics, if this is your thing. It can also be easy to write off aerobatics as a dangerous pursuit... "why would you want to do that?" This later attitude, from both within the aviation community and in the mind of the general population, can come about from many influences, but most certainly when an aircraft doing aerobatics has an accident and it is broadcast via the media (or these days via YouTube etc.) the sanity of pilots carrying out 'death-defying' aerobatics is questioned. Having said that, any aviation incident or accident often gets far more column-inches than would seem fair compared to other events in society, maybe because aviation is such a visible and spectacular activity... we defy gravity! You may have friends and colleagues who tell you they love watching the aviation crash/disaster documentaries, despite having no other interest in aviation. Flying (and crashing while flying) seems to fascinate a large proportion of the population!

Sadly, the occasional accident that does occur during an aerobatic routine often ends in tragedy - for the pilot and occasionally people on the ground. Ultimately, the ground is our biggest threat in aviation, being the place where a plane ultimately ends up when things go wrong.

But what can go wrong, and how?

## The way it is supposed to be

As humans, we are designed to work well with our heads up and our feet down - something to do with gravity. Most aircraft are the same, for various reasons. Mainly, the seats work better when fixed to the floor, but also engines have been designed for the oil to be in the bottom and the air in the top, as have fuel tanks. The distribution of loads and aerodynamic forces result in aircraft designs that typically function better 'right-way-up'.

But there is this fringe element of pilots that like mixing things

up a little, tipping the plane and its occupant/s upside down, in various ways that we call aerobatic manoeuvres.

## The ground getting in the way

Some would argue that all aerobatic manoeuvres are bad, but I beg to differ! Some are uncomfortable and some are disconcerting,

but with the exception of exceeding the design limits of the aircraft there are no aerobatic manoeuvres that should kill you. However, history will show (and history sadly repeats itself too often) that many people have been hurt or killed when aerobatic manoeuvres go bad - and all have that potential.

Having said that, straight and level has killed many people too, for example when a hill gets in the way.

Ultimately, it's as bad as things can get when you either a) hit the ground in your airplane, or b) hit the ground out of your airplane (it having already fallen to bits).

## Mechanical Failure

Starting with the last one first, planes fly to bits because they have exceeded their design limitations, or due to a mechanical failure. It would be easy to assume there will never be a mechanical failure, but the reality is that we must always have that possibility in the back of our mind - planes get old, damage occurs, fatigue can happen. Sometimes, a mechanical failure can occur from an earlier 'event', such as over-stressing the aircraft. Other times it can be just a gradual deterioration in the aircraft structure - this is particularly the case with wooden aircraft, but corrosion can severely affect the structural integrity of aluminium aircraft as well. Some failures will be random, such as many engine problems like a blown crankcase seal or magneto failure. In any case, regardless of whether you are flying acrobatically or not, do you have a contingency plan to cover this? Are you high enough, and/or fast enough to buy time to recover the situation. Sadly, in some aerobatic accidents, this has



A photo of the 'Shoreham Hunter' in happier times. The aircraft was destroyed in 2015 at a UK airshow in a tragic accident claiming 11 lives.

not been possible. The nature or design of some low-level displays has meant the pilot is totally relying on everything - everything! - working 100% to pull-off the display. A slight cough from the engine or a restriction in the flight controls and there is not enough height to safely recover. Was it the plane's fault?

A structural failure due to exceeding the design limits of the aircraft is quite possible too, for a variety of reasons. Most aerobatic aircraft have a design load of +6 'G' - i.e. the weakest part on the aircraft has been designed and proven to be capable of sustaining a force equal to six times its own weight, with at least a 150% safety factor. Some aerobatic aircraft are much stronger - typically 10 'G' for aircraft such as the Extra 300, MX2, and Giles G202. All aircraft have manoeuvring speed limits, known as Va, which allows for the structural loads imposed when moving the control surfaces. A combination of rolling and pitching results in a maximum 'Snap roll' speed, lower than Va. The aircraft's maximum speed, often set by the consideration of aerodynamic flutter but also other factors such as windscreen strength or aircraft structural loads, is quite easy to achieve in powerful and/or slick airframes. A poorly flown manoeuvre can result in many or any of the various design speeds and loads being exceeded and given sufficient force, even a (flying) brick can be destroyed.

## Flying into the ground

This isn't something you would knowingly do, so when it happens during aerobatics it would be fair to conclude the pilot had insufficient height to complete the manoeuvre, or to recover from a botched manoeuvre.

In the discussions that occur during training for low-level display flying, the term 'margins' comes up repeatedly, and it is a term that can be readily applied to all aspects of aerobatics, or indeed flying in general. A margin may be an excess of altitude to complete the manoeuvre, an excess of speed above the stall speed, or a margin of speed to commence the manoeuvre - most aerobatic accidents result from a deficit of one or more of those margins.

Not having enough height to complete the manoeuvre can come about from insufficient practice and therefore a poor understanding of the height required to complete the manoeuvre, or a flawed decision making process that resulted in making the decision to press on with a manoeuvre from a low level and hoping it will all work out okay. Hope is not a strategy!

Losing situational awareness is also a killer - not keeping an awareness of the entry height to safely complete a manoeuvre, or the height of the terrain below. A safe recovery requires sufficient height AGL (above ground level), not AMSL (above mean sea level).

Visual illusions can play a part in this - spatial orientation can be compromised over water or with an irregular horizon, such as above the level of the cloud base or in mountainous terrain. Getting 'busy' in the cockpit during a sequence, or wanting to please the audience, can distract you from monitoring your altitude.

Many experienced display pilots will note 'entry gates' - heights and speed - at various points in their low-level display sequence. The professional aviator will adhere to these gates religiously, or break-off to gain more height and energy. The novice trying such things should be a dot in the sky!

## Good manoeuvres that go bad

Every manoeuvre has the capability of going bad, even straight and level, as mentioned above. A hill can 'suddenly' jump out in

front of you due to poor planning, situational awareness or risk-taking.

To give you an idea of just how some good manoeuvres can go bad, here is a far from exhaustive list.

### Loops:

- start too slow... fall over the top, maybe into a spin
- pull too little 'G' at the bottom... fall over the top, maybe into a spin (again!)
- pull too hard going up... 'G' stall and wing drop
- roll while pulling... end up in totally the wrong direction
- not pull hard enough at the completion... overspeed and lose height
- pull too hard during the completion... 'G' stall, wing drop, and lose height (again!)

### Rolls:

- descending flight path... airspeed increasing, ground getting closer

### Barrel Rolls:

- roll-rate too slow for pitch-rate... airspeed increasing and ground getting closer

### Stall Turns:

- falling off the turnaround at the top... spin (upright or inverted!)
- rudder too early... ugly
- rudder too late... tail-slide, damage

### Half Cubans:

- steep 45... overspeed, ground getting closer

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### ● Reverse Half Cubans:

- not enough height at start... killer
- shallow 45... not enough height gained, overspeed, ground gets closer

### ● Half-roll then half loop down:

- not height enough at start... killer
- nose drops during the roll... over speed, ground getting closer
- too fast at entry... overspeed, over-stress, ground getting really close

### ● Half loop up then half roll:

- pull too little 'G'... too slow for the roll, stall/spin
- roll with nose too high... decaying airspeed, stall/spin

These are just some of the more typical scenarios that can happen, and have been observed! Notice how many of them result in an overspeed, often followed by the ground getting bigger - you can imagine this situation is ripe for an over-stress of the airframe, or worse - a total structural failure.

Also, notice how many can result in stall/spin. Are you current with spinning, in different modes such an inverted or accelerated? Fortunately, most training aircraft struggle to achieve these last two modes for very long, but the more exotic and powerful aircraft love them!

### Recovery

Prevention is better than the cure, although in some cases the cure can be fun too, i.e. spin recovery, so get current with spinning.

Prevention starts with training, followed up by regular practice. You will not see any of the regular airshow performers unintentionally falling out of manoeuvres. In the rare case of an airshow accident it will most often be a case of disorientation and/or a bad decision made to press-on with margins in deficit.

Many of the botched aerobatic manoeuvres mentioned above result in high angle of attack scenarios, so consequently getting instruction and familiarity with high angle-of-attack manoeuvring is vital. And high speed recoveries require some delicate but positive control inputs to minimise height loss and airframe stress.

Suffice to say, whether it be low speed, high speed, or spin recoveries, altitude is your friend - not too many people have got into trouble by being too high!

**Footnote:** These articles are intended to whet appetites for advanced flying and to offer tips to aerobatics beginners. Dual instruction and observance of CAA rules is a must-have - especially for safety and also for learning correct techniques and finesse of manoeuvres for the particular aircraft you are flying. For more information, enquire about aerobatics instruction at your local aero club or go to [www.aerobatics.co.nz](http://www.aerobatics.co.nz)

## Planes of the NZ Aerobatic Club Zlin Z50LS



**ANOTHER** one-of-type on the NZ register, this aircraft was imported in 2005 by David Cranna, who is a rather tall guy and struggled fitting into the Pitts S2B of the time. Fortunately, the Zlin Z50 has generous seating adjustments and good canopy clearance.

Also fortunate is the relative affordability of this very capable aircraft, partly due to the fact they are from the Czech Republic but also due to the passage of time and newer designs coming along that are more capable at the highest levels of the sport.

Originally designed in 1973 with a 260 hp Lycoming and designated the Z50L, the more prolific (34 built!) Z50LS came along in 1982 with the 300hp Lycoming fitted for better vertical manoeuvres. Construction is a beautifully built aluminium monocoque, and it is surprisingly light for a reasonably large aerobatic plane that is stressed to +9/-6 'g'.

During the late '70s and early '80s the design had good success for the mainly Eastern-bloc pilots who flew it - the type won the 1978, 1984 and 1986 World Aerobatic Championships. About that time, the Russians upgraded their designs with aircraft such as the Sukhoi SU26, which became the plane to beat, and the Zlin faded from the world scene, at least at the top level. However, it is still a very capable performer and continues to compete in Advanced and Intermediate competition.

With a relatively large wing and a big Hoffman composite propeller, the aircraft is particularly good at low-speed gyroscopic manoeuvres (tumbles), something David shows to great effect in his displays.

### Competition Aerobatics Events Calendar 2016

<b>February 23-28</b>	<b>March 16-19</b>
Flying NZ Nationals	NZ Aerobatic Club Nationals
Mid Canterbury Aero Club, Ashburton	Hood Aerodrome, Masterton
For more details check out the events page at: <a href="http://www.aerobatics.co.nz">www.aerobatics.co.nz</a>	

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**2013 (OH) ROBINSON R22 BETA II** S/N:3777 TR: 839 Hrs Maroon with Gold Logo, Tan Interior. Equipped with Collective Lock, King KY197A VHF Com, TXP/Encoder, UHF Radio, Aux. Power Plug, Collective Lock, Canvas Seat Cover, Fresh 100 Hourly & ADs complied with. Available ex Jandakot Airport, WA. Note: New MR Blades & Spindles. New Metalised Clutch Assembly. TTIS: 5515 Hrs ( approx.) POA

**2013 ROBINSON R22 BETA II** S/N: 4624 TT: 1175 Hrs White with Dark Blue Trim, Tan Velour. Equipped with Fuel Bladder Tanks, Cargo Hook, UHF, Metalised Upper Sheave, King KY197A VHF Com, Gamin TXP/Encoder, ELT 406, Fresh 100 Hourly & ADs complied with. One owner. No Damage History. Available ex Bankstown Airport. POA

**2007 ROBINSON R22 BETA II** S/N: 4120 TT: 1200 Hrs Black with Gold Trim, Tan Leather. Equipped with Cabin Heater /Defogger, Millibar Altimeter, King KY197A VHF Com, New Gamin Transponder with Encoder, ELT Kannad 406, New MR Blades TTIS 0 Hrs, New C of A, Fresh 100 Hourly & Ads complied with Tie Downs, Bubble Cover & Ground Handling Wheels. Privately Operated, No Damage History. Available ex Bankstown Airport. POA

**LATE 2006 ROBINSON R44 RAVEN I** TT: 1200 Hrs (approx) Navy Blue with White Trim. Equipped with Fuel Bladder System, Tan Velour Seats, Canvas Seat Covers, 4 x Bubble Windows, Tinted Windshield, King KY196A VHF COM, TX 3200 UHF, King KT76C TXP/Encoder, CD/AM/FM Radio installed, ELT, Cargo Hook, Floor Mats, New Interior Lining, Dual Controls, Rotor Brake, Based in QLD. POA

**2006 ROBINSON R44 RAVEN I** S/N: 1565 TT: 1398 Hrs Volcano Red Pri Metallic with Taupe Frost Met Trim Tan Leather Interior. Equipped with 4 x Bubble Windows, King KY197A VHF COM, Garmin 250XL GPS/COM, NAT AA12 Audio Panel, TXP/Encoder, Millibar Altimeter, Rotor Brake, Cabin Heater & Defogger, Bubble Cover, Tie Downs, Wheels. One private owner. Maintained by Heliflite. Recent 100 Hr service (Dec 2015). Available ex Bankstown. POA

**2008 ROBINSON R44 RAVEN II AIR CONDITIONING** TT:430 Hrs (approx) Black with Silver Trim (Carbon Black Wrap) Tan Leather Interior. Equipped with Fuel Bladder Tank, 4 x Bubble Windows, Tinted Windshield, King KY196A VHF COM, HF Radio, Garmin 695 GPS, Audio Panel, King KT76C TXP/Encoder, Cabin Heater & Defogger, Wheels, Bubble Cover & Tie Downs. Based in Queensland. POA

**2005 ROBINSON R44 CLIPPER II** SN:10952 TT: 500 Hrs (approx) Jet Black Metallic, Tan Leather Interior. Equipped with Pop-Out Floats, 4 x Bubble Windows, Tinted Windshield, King KY196A VHF COM, AH, DG, TC, King KT76C TXP, Garmin 430 GPS/COM/VOR, Millibar Altimeter, RHC Oil Filter Kit, Rotor Brake, Fuel Bladder Tanks, NAT AA12 Audio Controller. VIC Based. POA

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# Two new aircraft for NZ Warbirds to be available for flying at 'member rates'

New Zealand Warbirds was formed circa 1977 around a nucleus of surplus RNZAF Harvard aircraft. As the Association has developed one of the core values has always been the operation of Historic 'Warbird' and Classic aircraft. We achieve this through our CAA Part 149 Certification where we are instrumental in the facilitation of aviation events and pilot certification. More latterly we have achieved CAA Part 115 Certification to enable 'Adventure Aviation flights in our historic aircraft.

The Association has never owned any aircraft, this being the preserve of individuals and fostered 'Syndicates' who operate aircraft under the 'Warbirds' banner. The Association is proactive in the oversight and airshow facilitation of member's aircraft. For many years Warbirds has 'enabled' the Roaring 40s Harvard Aerobatic Team, a stalwart of many public events.

The 'Aircraft Ownership' equation has changed of late with four aircraft now in our stable. The first two are the ex RNZAF Skyhawk (on loan from the RNZAF Museum) and Aermacchi which was 'donated' by the Government. Of these two the Aermacchi 'could' be flown if resources (i.e. dollars) were available.

In the past few months the Association has been donated two historic aircraft for us to operate.

The first is the Miles Messenger ZK-CMM. This aircraft was imported from Australia in 2003 by Mr. Dave Cowie. After Mr. Cowie's death the aircraft was administered by the family trust and flown occasionally. After an enquiry by one of our members in an effort to gain better



## The Miles M.38 Messenger

**THE** Miles Messenger was built as a private venture at the request of British Army officers for a robust Airborne Observation Post (AOP) and liaison aircraft. The aircraft is of wood monocoque construction, designed to operate from unprepared airstrips in all weathers and be flown by pilots with limited experience. The design was an immediate success fulfilling all of the Army requirements. However, as Miles had not obtained official (Air Ministry) authority to produce the aircraft, the M38 was not ordered into production and only 21 were completed before wars end. Famous users included Field Marshal Sir Bernard 'Monty' Montgomery (who had 3 as personal VIP liaison) and Marshal of the RAF, Lord Tedder.

ZK-CMM serial #6372 was constructed in Newtownards Northern Ireland as a Mk 2A and registered as G-AJVL. The aircraft was used as an air taxi with Tyne Taxis of Woolsington for 18 months. It was shipped to Australia in 1950 and became VH-BJM. It was grounded in 1963 due to glue failures in other Messengers around the world and subsequently bought by Bill Thompson who spent 5500 hours over four and a half years to rebuild to its current condition.

The Messenger was purchased in Australia in 2003 by Dave Cowie, shipped to New Zealand and registered ZK-CMM.

access, the Cowie Trust kindly decided to donate the aircraft to the Association on the condition that we maintain its airworthiness whilst practicable. As we go to print the aircraft is undergoing its Annual Review of Airworthiness inspection (ARA). This has required some engine work in the cylinders which were down in compression, the majority of which is being completed by our erstwhile 'flying spanners' Ace Edwards and Graeme Wood. We hope to have the aircraft back in the air in three to four weeks

The second aircraft is a Ryan PT (primary trainer) -22, formerly owned by long time Association member Les Marshall. This aircraft was built in August 1941 and entered US Military service as 41-20845. Following its Military career the aircraft entered the US Civil register as N5795. After a number of owners it was rebuilt in 1993 and appeared at Oshkosh in 1994.

The aircraft was acquired by Les Marshall and entered the NZ register as ZK-RYN first flight 'down under' in December 1998. It has since appeared at numerous air shows, rallies and fly-ins. Les had the aircraft 'on the market' for a couple of years whereupon it was purchased by an enthusiastic supporter and donated to NZ Warbirds Association to operate. It will join the MOTAT-owned, Warbird-operated Ryan STM on the aviation circuit.

Both these aircraft create a new direction for the Association and some new challenges. We are currently in the process of setting up 'Operating Groups' for both aircraft, striving to find the balance between operational integrity and financial viability. The intention is to invite qualified members to join these 'Groups' at an affordable contribution and to fly the aircraft at an affordable rate. If you are interested in either aircraft please contact the Warbirds Office.



## The Ryan PT-22

**IN** 1922 Claude T. Ryan founded 'Ryan Airlines' based on converted ex-military aircraft. Ryan exited the airline scene but remained in the construction business, his first design the Ryan ST (Sport Trainer) which first flew in 1933.

A development of this aircraft, the STM was used as a military trainer and a number delivered to the Dutch Air Force, with a few of these finding their way to Australia during WWII. One of these (ZK-STM) is resident in New Zealand and operated by NZ Warbirds.

Further developed with a 'Kinner R 540' 160 HP radial engine the aircraft became the Ryan PT-22 'Recruit', the US Army Air Corps' first purpose built monoplane primary trainer (PT) and saw extensive service in this role during WWII with over 1000 of the type being produced.

Post war the aircraft became a popular aircraft in the training and sport arenas.



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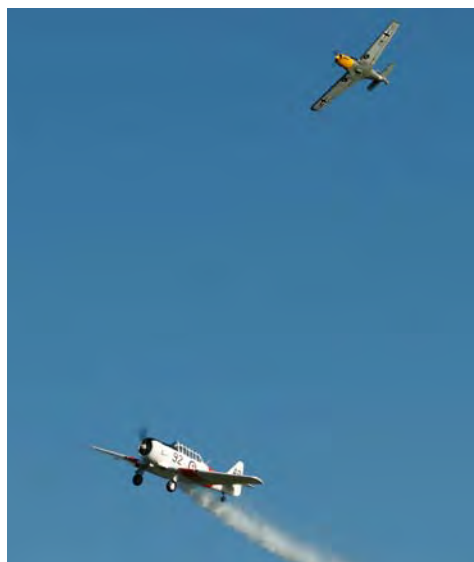
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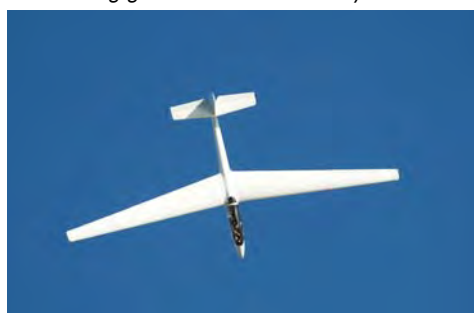
# Classics of the Sky



The Me-108 attracted plenty of attention once it started attacking Allied aircraft with guns blazing.



A fully autonomous UAV flew a couple of routines, showing great control in the steady breeze.



If it hadn't been for the commentator, many may have missed the excellent and silent glider display.



When 'Superman' and his accomplice 'stole' a Harvard from the flight line, the Armed Offenders Squad were quick to make an arrest.

**FOLLOWING** a new format this year, Classics of the Sky at Tauranga (23rd January) became an afternoon/evening event billed as 'Spitfire at Sunset' and combined with 'The Mount Truck Show'. The event ran in perfect weather and was well attended. Plans were afoot to hold it in two parts with a second event on 19th March however logistical reasons have subsequently caused the second date to be cancelled. Those that attended in January however, got to see a suitably full and varied 3.5 hour programme - with a broad mix of old and new, warbird and recreational aircraft on display.

Visitors were lucky to see John Luff's Venom which happened to be at Tauranga for maintenance so picked up a display slot. The rasp of noise as John scorched past the crowd at 730 kph was very memorable. The father standing beside me was well justified when earlier declaring to his young children that they weren't going anywhere until he'd seen 'that' flying. Also very memorable were Doug Brooker's displays first (and third) in the Spitfire and in his new MX-S. The Me-108 attacks on Allied aircraft was another highlight for the crowd. It's a shame about the March event but the good news is that Classics of the Sky will now be held annually so we can look forward to another in 2017.



This year the event included 'The Mount Truck Show', with row upon row of immaculate vehicles.



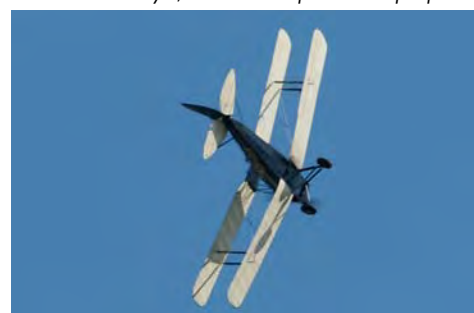
A change of format to an afternoon/evening programme this year drew in good crowds.



Russel Harris' showed what his Pitts S-2E could do, with a perfect paint scheme to contrast the sky.



Two members of the public got to arrive at the airshow in style, via tandem parachute jumps.



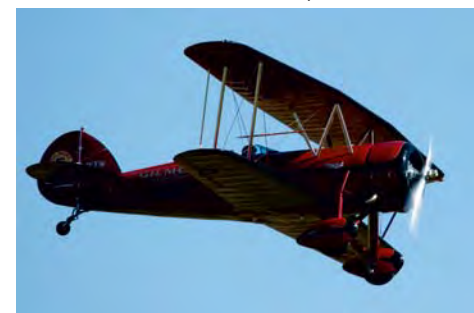
As is usual for the type, a pair of Tiger Moths put on a graceful display including opposing passes.



Jim Rankin in the Grumman Avenger made for an impressive start to the show, then flew another display routine later in the show, as well as demonstrating wing folding in front of the crowd line.



Doug Brooker displayed his Spitfire in the usual polished manner to a very appreciative audience. In its new afternoon/evening format, the event was headlined as 'Spitfire at Sunset' with Doug flying a routine early in the show and then again around 7.30pm in the evening light.



The NuWaco T-10 is in fact a kit aircraft (rather than a replica) based on the Waco model 10.



Stearmans approach in formation as the Venom heads off to the holding point.



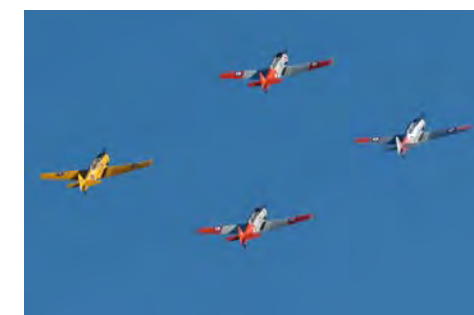
Three gyros from Gyrate at Tauranga performed a short display routine together.



Three gyros from Gyrate at Tauranga performed a short display routine together.



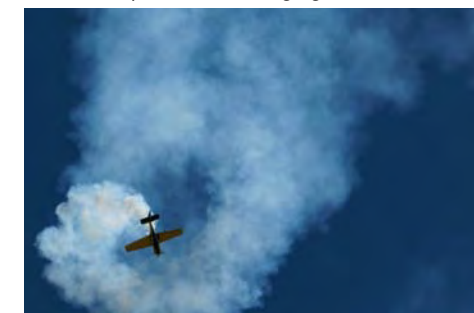
John Luff thrilled the crowd with his Venom display including a flypast clocked at 730 kph.



The Roaring '40s Harvard Display Team led by Frank Parker are airshow stalwarts.



Doug Brooker performed a stunning aerobatic display (inverted flat spin pictured) in the MX-S.



Doug Brooker performed a stunning aerobatic display (inverted flat spin pictured) in the MX-S.

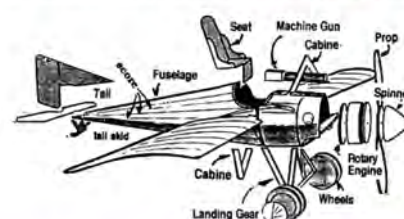


Plenty of applause from the flight line for Doug Brooker as he taxied his MX-S back past the crowd.

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# Day of the Dominators

**DOMINATOR** gyros lived up to their name at the annual NZ Autogyro Association fly-in held at Dannevirke at the end of January. Eight of the thirteen gyros present were single or tandem seat Dominator designs. The Gyrate team flew two Auto-Gyro MTOs in from Tauranga and John Rochfort from Porirua also arrived by air in his Xenon. Dubious weather across much of the North Island

kept other potential fliers grounded, though plenty made the trip by road to catch up with long-time friends and spend a couple of days talking all things gyro. Two new aircraft to arrive were Lloyd Fitzsimons' single seat 'Bensen Special' and Neil Hintz's single seat Dominator RON powered by a new engine of entirely his own design (see sidebar). As is always the case at these events, a fine time was enjoyed by everyone.



The brand new Autoflight Dominator including Autoflight 2-stroke Twin. See sidebar for more info.



Ed Evenbly comes in to land following his first solo flight in his tandem Dominator.



A familiar face at fly-ins; Sybe Haakma in his plans-built Rotax powered Dominator.



John O'Leary's Autoflight Dominator has just had the test hours flown off a new engine.



Paul Kuchenbecker got plenty of airtime in his Autoflight Dominator over the weekend.



Lloyd Fitzsimons has aptly named his black and white gyro Sky-Orca.



Weather concerns meant a reduced number of aircraft attended the Dannevirke Fly-in this year, but there was still plenty to see and talk about. At left, two MTOs made it from Tauranga and at right, an ELA.



The smile of a first solo. Instructor Elton Haakma congratulates Ed Evenbly on his achievement.



Darth Vader in the latest weapon from the Dark Side or Bryan Brunton in his AirCommand?



John Rochfort's Xenon is a regular flying attendee at Dannevirke, arriving from Otaki.



One of the MTO Sport's heads back to Tauranga on Monday morning.

## New Autoflight 2-stroke Twin takes flight



Neil Hintz has good reason to be smiling, having just seen his new Autoflight 700cc twin cylinder two-stroke engine fly for the first time. Entirely of his own design and production, this is a 'modern' two-stroke engine with a lot of potential for light aviation use. This first-generation version is producing 80 hp and weighs in at just 42 kg. It is water cooled, has nickel-silicon bores, case-reed induction and modern porting arrangements, with an integrated counter-balance shaft to minimise vibration, electric start and a built-in 12V charging system. The gearbox is integrated into the design, making the whole installation extremely compact. The engine also includes a power take-off shaft, ideal for an autogyro pre-rotator. Look out for an article on this in a future KiwiFlyer. Neil's contact details are below.

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Craig Stobbs bought his Glasair III kit out of Montana and had it shipped to NZ in 2001. When his job later saw him shifting



to Dubai, he shipped the kit there so that he could continue with the build. Now back home, he has completed the aircraft and started a test flying programme. He says it's a very docile aircraft to fly, even though it has a top speed of 290 kts. The aircraft will be based at Hood aerodrome in Masterton.

## March/April Events

3rd Sunday of each month to May  
**Turangi Aero Club BBQ**  
Weather permitting from around 1100.  
BBQ & drink \$10. No landing fees.  
Contact Alan Turner, xpdxd@gmail.com

March 16 - 19  
**NZ Aerobatic Club National Champs**  
Hood Aerodrome Masterton: aerobatics.co.nz

March 25 - 28  
**Warbirds Over Wanaka**  
The not to be missed biennial airshow.  
www.warbirdsoverwanaka.com

April 16  
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## Len Thompson receives Paul Tissandier Diploma from FAI

ON 23rd January, members of the Bay of Islands Aero Club hosted a luncheon for members and invited guests for the presentation of the Paul Tissandier Diploma of the Fédération Aéronautique Internationale to one of their members, Air Commodore Dr. Leonard Thompson, MBE, RNZAF (Ret'd)

Far North District Council Mayor John Carter, and Deputy Mayor Tania McInnes joined with many guests from the Kerikeri



aviation community to watch Liz King of Flying New Zealand make the presentation.

These diplomas are awarded to persons who have served the cause of aviation (and private and sporting aviation in particular), by their work, initiative, devotion or other endeavours.

Len is Vice-President of the aero club, and also flies his own aircraft, a scale copy of the P-51 Mustang flown by him in the Air Force during his RNZAF service.

### from previous page

WIV Piper PA-34-220T  
WPS Quad City Challenger II  
WTD Cessna 172M  
XIV Supermarine Spitfire FR Mk XIV  
ZSP Partenavia P 68B

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Hamilton  
New Plymouth  
Blenheim  
Hamilton

Aeroplane  
Microlight Class 2  
Aeroplane  
Aeroplane  
Aeroplane

### DEPARTURES - November / December 2015

AMN Cessna 162  
EWC Denney Kitfox IV  
FOL Micro Aviation B22 Bantam  
HKU Eurocopter AS 350BA  
HRJ Robinson R22 Beta  
HUC Robinson R44 II  
HZO Eurocopter AS 350BA  
INA Robinson R22 Beta  
JGB Douglas DC3C-S1C3G  
LFT Fairchild SA227-AC  
MOH Aero Commander 690  
MXT MXR Technologies MX2  
OBZ Tecnam P2006T  
XVL Learjet 35A

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## New Year's Day at Athbey Farm

RECREATIONAL aviation for 2016 got off to a good start with the 11th annual New Year's Day fly-in at Athbey Farm, Woodville. A record 36 aircraft were noted in attendance coming from as far away as Patoka (Napier) on the east coast and Norfolk Road airstrip Taranaki on the west coast.

Seven first of type to visit were noted, these being; Bolkow 208 Junior (x2), Piper J3 C50, Tomark Aero Viper, Cavalier SA 102, C 182, Zenith Zodiac 650, and of particular interest the sole remaining flying example of a Yeoman Cropmaster topdresser.

Already New Year's Day 2017 promises to also be special with space booked for another very rare aircraft to attend that once saw extensive operations in New Zealand, but again the only one remaining in the world. Watch this space, says Athol.

Another tradition at Athbey Farm

airfield is to host the NZ Autogyro Association for morning tea at the time of their annual fly-in and AGM over Auckland Anniversary weekend based on Dannevirke Aerodrome. Weather concerns and some planning confusion meant this year's mass fly-out took place on Monday morning with a corresponding reduction in numbers, but participants confirmed 2017 will

see a return to the normal Sunday morning visit, weather permitting.

*Ed. 's note: Athol sent me this report (it's Athol and Betty Sowry's farm). What he hasn't mentioned is the outstanding hospitality provided to all aviators who visit their property during these events – or at any other time as well. On behalf of everyone who flies in to Athbey Farm airstrip, a vote of thanks to the Sowry family and their helpers for making these occasions very enjoyable indeed.*



## New Zealand Soaring

contributed by Alex McCaw

KiwiFlyer



# Junior World Gliding Championship

Regular KiwiFlyer Gliding Contributor Jill McCaw passes her pen to her son Alex for this issue, as he reports on representing New Zealand at the Junior World Gliding Championship.

IN December last year I competed in the Junior World Gliding Championships, held in a place called Narromine, which is about five hours drive inland from Sydney. Narromine is a very small farming town located on the featureless New South Wales Plains and has a very hot and dry climate; not really a place you would normally like to visit but these reasons make it very good for gliding. The hot climate is perfect for creating the thermals (rising columns of air) which gliders need to stay in the air and use to fly long distances, while the featureless plains means that these thermals are very predictable and uniform.

The Junior World Gliding Championships is a biennial competition for pilots under the age of 25 from all around the world. In total there were 60 pilots from 17 countries competing in two classes. Myself and my mate Nick Oakley were the only competitors from New Zealand but we did have a rather large team consisting of coaches, managers and engineers. As gliding in Europe is quite a popular sport, many of the pilots that came over were semi-professional, with most of their training, travel and other costs funded by their respective governments and sponsors. We heard that the five pilots from Germany had been chosen from two hundred applicants. It was always going to be a challenge competing against these pilots. Nick and I were the top junior pilots in New Zealand and had a small fund from Gliding New Zealand but most of our costs were covered through fundraising by family and supporters.

Nick and I had been in training for this contest for four years, flying in as many New Zealand contests at regional and national level as we could and flying in the Australian Junior Nationals, known as JoeyGlide, for the last three years. The last two JoeyGlide contests had been held at Narromine so we felt we had a good knowledge and experience of flat land thermal flying.

The competition consisted of 10 days flying, each day racing around a set course of between 300km and 650km with the cumulative scores for each day adding to the total scores. Basically the name of the game was to fly as fast and consistently as possible.

The first seven days I managed to do just that. We had some great weather conditions that allowed us to fly our gliders at really high speeds around these long tasks, often at speeds in excess of 250kph, meaning we could often achieve a 650km task in just over four hours. My consistent flying paid off putting me in 3rd place after the seven days of flying.

Nick had an unfortunate start to the contest with a landout

on day 1 that left him way down the points, but he was flying consistently well and clawing up the placings. He came 2nd on Day 6 and but with the level of flying from the rest of the competitors it was never going to be enough to pull him into the top placings. He

didn't give up though. The scores were so close, with only seconds between the winner and the 10th place getter on some days, even after a flight of over 500km. That is just amazing. It was really exciting.

Unfortunately, the next couple of days didn't go well for me; one day in particular when a change in the weather meant I was forced to land in a farmer's paddock 50km short of the airfield. 14 other pilots landed out

that day but a few managed to get home, changing the scores quite considerably.

At the end of the competition the final results put me in 12th place. The couple of slow days really cost me but overall I was really happy with how I performed. It was a great experience and a big learning curve flying at that level of competition.

Numerous people helped me get to the Junior World Gliding Championships but I would especially like to thank the team that supported us on the ground. There were lots of people so I won't mention any names. Thanks to my employers Soil & Rock Consultants for the sponsorship they provided to assist me to get there. Other sponsors to thank are: Gliding NZ, Pro-Drill, Youth Glide, Kathmandu, Richie McCaw, Narromine Tourist Park, Neil Allison, Nigel and Retha Ackroyd. We also need to thank the late Bill Walker and David Speight who gave support, encouragement and financial help before their deaths and the many glider pilots who gave donations, raffled their underwear or helped us in other ways. Thank you everyone, it meant so much.

Alex McCaw



Nick Oakley (2nd left) and Alex McCaw (centre – holding small flag) and the NZ team of coach, manager, crew persons, engineer, cook and dog at the opening ceremony.

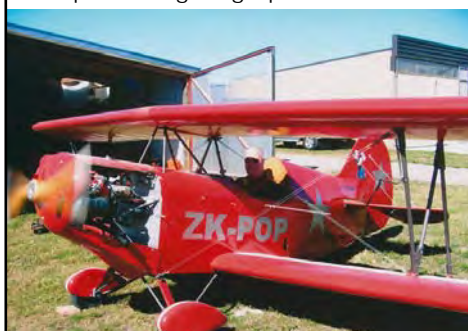


Nick Oakley coming in to land in 2nd place on Day Six.





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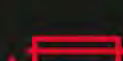
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