RAANZ
Recreational Pilot e-zine
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RAANZ 2021 Roadshows

Following the successful South Island events, time for the North Island.

The RAANZ Roadshows are put on at RAANZ expense and presented by the RAANZ volunteer executive members.

They are an extremely important part of the continuing process of ensuring that our members, pilots and I/As are kept up to date with the constant changes in the way we operate.
It is particularly important that you attend these roadshows in your area, especially for aircraft owners and IAs.
There have been considerable changes in how we now operate and what your responsibilities are. Examples are the on-condition program- Does it effect you and what is your understanding of this new process? What is acceptable and what is not. Transponders ADSB. Modification, what is acceptable and what is not. A/Ds, Service Bulletins. Human Factors etc.

Please note these dates and come along. We welcome all questions and discussion from the floor so if you are unsure of what is acceptable or correct in today's world please ask on the day.

These road shows are open to anyone so let other pilot, owners etc know and to attend if they wish.
See you there.

- **Feilding** Airfield Saturday May 29 1000-1400
- **Parakai** Airfield Saturday June 5 1000-1400
- **Kerikeri** Airfield Sunday June 6 1000-1400

Traffic awareness and monitoring

Rodger Ward/RAANZ OPS

Most of you will know by now there has a marked increase in technology arriving on the aviation scene which if used correctly and competently has the potential to make our sport safer and more enjoyable. But if used incorrectly or incompetently this technology has the potential to create a Cognitive Overload situation whereby the basic flying of the aircraft is overlooked with very bad press consequences.

One of the pieces of technology I'm referring to is the painting of the position of other aircraft onto your moving map display designed to assist you in "Seeing and Avoiding" which is the cornerstone of our operation in Glass G or Uncontrolled Airspace. This technology is available in many forms eg Av Plan and Oz Runways other traffic and ADSB in.

Quite a bit of work has been done recently looking at how these devices work and this work is ongoing.

Without going into a lot of detail.

- **Not all** of the traffic out there will necessarily be on your screen !! Looking out is and always will be an absolute necessity!
- The **position** of any traffic that is painted on your screen will be **quite accurate.**
- The displayed **altitude of the other traffic** displayed may **not be accurate** in relation to your altitude.

So

- Get to know your equipment, what it does and how to use it very well.
- Don't rely on one tool to do the job. We have a myriad of tools available. Use them all.
- Keep cross checking. There is always another Alligator in the swamp ready to bite your bum given half a chance

RAANZ Membership Requirements

Scott James/RAANZ AUDIT

Following the recent audit of the RAANZ membership, there are a couple of key issues that have been raised.

Ongoing membership

If you are flying on a Part 149 certificate, it is a requirement that you remain a member of the issuing organisation to be legal to fly. This differs from Part 61. Many of the comments back during the audit included "I didn't see the reminder". It is your responsibility as the pilot to ensure you are current. This includes your BFR, Medical and Part 149 membership (and of course your aircraft annual). "I wasn't reminded" is unlikely to keep CAA (or worse - your insurance company) happy.

For those of you in RAANZ, you can log on to the RAANZ web site and check/update your own details. If you change address, email or phone number, it is important that you update this information. myRAANZ Page.

Part 61 Pilots. This membership requirement also applies if you are a Part 61 pilot flying microlights under a microlight certificate. In this case your rating is tied to your Part 103 certificate, not your Part 61 license. Part 103 Instructors can only issue a Part 103 certificate/type rating, not a Part 61 type rating.

If there are any questions, please feel free to send me a note (audit@raanz.org.nz).

Operational notes

Rodger Ward/RAANZ OPS

I have always said that we have one of the best Microlight Operating Frameworks in the world.
It is a privilege, not a right and must be treated with the utmost respect.

I have been involved with aviation since learning to fly while still at school in 1970 and have been involved with Microlights since they started arriving en masse in the early 1980s. One of they main things I have learnt is that the machine that can provide so much pleasure can after a moments inattention very quickly create untold havoc.

Over the last few weeks there have been 4 very serious accidents which in some cases through good luck only have resulted in no fatalities. Our thoughts go to those affected by these events

and wish them well through the recovery process. Without prejudging the outcome of any investigation into these events I think a reminder of some basic Airmanship is prudent.

Checklists.
Aviation is full of checklists and for very good reasons.
eg

- IMSAFE
- Preflight
- Take off
- Downwind
- HASEL
- Engine Failure

Get to know them all and know them well.
Ask your friendly Instructor if in any doubt. There are no dumb questions.
Probably the most important is the Takeoff checklist (DVA, Drills of Vital Actions in old speak. Because they are extremely vital.)
If you are very current on type then checklists will flow, if you are new to type or lacking currency then deliberately slow down where practical while performing the critical checks.

Prefight briefing.
As you will know with any Instructional flight there will be some time set aside before flight to discuss what is about to happen and why, some talk about where the flight will take place and what is expected to be achieved.
After flight there will be some talk about how the flight went, things that went well, things that didn't go so we and some things to work on for next time.
All part of the learning process and we are all still learning!
Try and include lots of prebriefing and debriefing for every flight. Even if it involves talking to yourself.

Know your limits
Do things that you know are ok not that you think are ok.
If you ever hear yourself or someone else saying " I think this will be ok" **stop** or get them to stop and reset the plan to something that will be OK.

RAANZ now has a Facebook page.

Find us on Facebook - https://www.facebook.com/RAANZ-341650983905724

RAANZ events, photos and information. You know – the normal Facebooky type stuff.

ADS-B Out and In - 6 months experience.

Anday Drain/CRAC

When I built my Savannah, 3 years ago, I always intended to install ADS-B when the government gave some assistance. Well three years later I have a complete ADS-B system operational and am six months down track using it.

What is ADS-B OUT?

A system that transmits your accurate GPS coordinates and pressure height every second, to anyone that wants it. The pressure height is based on the standard pressure setting of 1013 hPa

It can also transmit a lot of other data depending on what is connected to it in your aircraft. As one example it can transmit your IAS but your ASI would need to be able to pass the information to the ADS-B system. Fine on a large airliner but less practical on a microlight.

Summary

The most important data sent in every ADS-B transmission is GPS position and Pressure altitude. This is common to ALL installations.

Pressure setting notes

> *Using 1013 hPa ensures that there is a common datum to compare the altitude of all aircraft. ATC computer systems will calculate the altitude based on QNH and display this to controllers for aircraft below the Transition altitude. The airborne system I use displays the relative height of other ADS-B aircraft to your aircraft.*

What is ADS-B IN

A system that receives ADS-B transmissions from other aircraft and displays them to you.

My system

ADS-B OUT

I went for a system that was “single box” hoping to avoid some installation costs/complexities. It also seemed to provide the best value.

The system is the GARMIN GTX335 which is a combined transponder and ADS-B out. The transponder is the latest Mode S variant.

It required the installation of a GPS aerial (included) and a transponder aerial (not included)

Altitude data is supplied from a small component (Included) that is attached to the rear of the equipment. This is pre-set to 1013 hPa.

Note that altitude information transmitted by ADS-B IS NOT what your altimeter is showing. (Unless you have 1013 set).

ADS-B IN

This is provided by a uavionix "pingUSB" device that is the size of a USB memory stick. It is fastened on the top of my windscreen and receives power from a USB socket. (Mine is a plug in on the dash).

This device sets up a wifi network which display devices can connect to to receive the ADS-B IN data. The data it sends over the wifi channel is a to a global standard so most display systems can use it. (Warning the standard was developed by Garmin but their systems may not use it)

ADSB-IN Display

For the display of ADS-B IN I use an IPad. I have an Android tablet as well but the IPad software seems marginally better.

On the IPad I use OzRunways as my navigation system. This connects flawlessly to the "pingUSB" and displays ADS-B traffic on my map as targets. These show callsign and height above or below my aircraft. If touched they expand for a few seconds and additionally showed target ground-speed.

More on the displays of IN traffic later as it can be complex. There are also other device possibilities.

Cost

In total, installed and certified, this cost around $5000 - after the grant. This includes the GTX335, the "pingUSB" receiver, the GPS aerial and the transponder aerial. The ADS-B IN display is not included in this price.

Note - The grant allows up to $500 for ADS-B IN. The "pingUSB" is currently around $300.

ADS-B OUT in use

I rarely go into controlled airspace but it is there if I want to. Many people say why spend that amount of money when they never fly into controlled airspace.

A fair comment, so why have I done this:
The first reason is that other aircraft with ADS-B IN can see me.

The second reason is for flight following. I never file a flight plan and often don't know which direction I am going until I am airborne. My wife can now track the flight using FlightRadar 24. If she is with me we notify my son, who can also track us if we fail to check in again when we return.

There are some issues when in the mountains but at least she can see where I entered. In future adding an extra aerial on top of the aircraft might allow satellite tracking. There is at least one helicopter in the South Island which shows as being tracked by satellite when deep in the mountains.

Finally I can go into controlled airspace, if I want, and the Transponder allows flight in the areas of airspace which are transponder mandatory BUT NOT controlled airspace.

These tend to be around airfields where schedules operate but there is no controlled airspace.

ADS-B IN - in use

I fly with an IPad on my knee-pad and use OzRunways as a navigation tool. This overlays the ADS-B IN traffic from the "pingUSB".
This display is used to enhance my situational awareness. It is another tool to help build the picture and supplements information from radio calls and a good lookout.
It allows a quick assessment if traffic is a threat or not. I have found it much quicker to identify if traffic is a threat, than just using radio reports. It can reduce the need for radio calls.

Some practical examples:

Approaching the airfield for an over head join. Two other aircraft have also reported they are approaching to make an overhead join. One is ADS-B equipped and is quickly classified as not a threat - allows more time to visually search for the other aircraft.

Southbound to a common Visual Reporting Point. Opposite direction traffic makes a report overhead the VRP. It is ADS-B equipped and is quickly classified as a threat. The position of the ADS-B symbol helps in visually spotting the aircraft and making a track/level adjustment to avoid.

Listening on a busy frequency. Two aircraft some distance apart use several transmissions to establish this fact. The are both ADS-B OUT equipped and I can see they will never get close. They don't have ADS-B IN so occupy the frequency for some time.

Some examples of threat management

Southbound out of Kaikoura to Rangiora. Sightseeing down the initial part of the coastal road earthquake works. Then a climb to 4500ft direct Rangiora. Pretty much a random track. Levelled momentarily at 3000 ft to assess the cloud ahead. Decided to continue to 4500 ft. Quick glance at the IPad before the climb. ADS-B target 8 nm directly behind same track indicating 500ft above. Called on frequency using displayed callsign, but no reply. Moved slightly left of track, shortly after the aircraft passed overhead where we would have been. We are high wing, they were low wing. If we had climbed we may have missed by luck. I doubt they even knew we existed.

Crossing tracks, quiet day, middle of the Canterbury plains south of Christchurch. ADS-B target observed same level on crossing track. Observing periodically showed it would be very close. Same level. The other aircraft called me, obviously had ADS-B IN, I climbed 500 ft above. No issue. Without ADS-B we probably would have both had a surprise. Sometimes it is quite hard to spot aircraft.

Summary

The main advantages of ADS-B IN is that it provides another tool to assist in maintaining situational awareness. Including:

- Quick assessment of traffic to see if it is a threat or not
- Assistance in planning a safe path
- Assistance to visually spot an aircraft.

Cautions

- Look out is still of vital importance.
- ADS-B height information may not always be accurate.

- Only use direct ADS-B IN data from your system

Notes - ADS-B IN technical

The following is expanded information on the display of ADS-B IN information. It is provided for those wanting more detail.
Many of the more sophisticated avionics systems will display information on ADS-B traffic. I have no direct experience of these so will mainly discuss the system I use.

Navigation tools

In my youth, a long time ago, I used to fly with a map in my lap and spent a reasonable amount of time looking at the map and comparing with the outside world. My initial flying was in the UK and knowing your position with visibility rarely above 15km and lots of controlled airspace was essential.

Now I have an IPad on a knee-pad. This only requires an occasion glance as it shows me where I am on the map. This greatly reduces the time I used to spend with my head in the cockpit.

The software I use is OzRunways. I have also used AvPlan for a while but currently prefer the OzRunways display of ADS-B IN traffic. Note that the choice is very much a personal preference.

Display of traffic

Non ADS-B traffic, or indirect ADS-B traffic

Traffic processed by a ground based system and relayed via the internet through the cell phone system for display on a device in the aircraft.

Both OzRunways and AvPlan display information on other aircraft that are using their software as well as ADS-B traffic.

The information for other non ADS-B aircraft using their system is relayed via data through the internet on the cell phone system. It is liable to delays in the internet, system servers and processing. Each user must also opt in. Callsign display is optional for the originator and many targets show as unknown.

AvPlan also have a FlightRadar24 like network of ground stations. This displays ADS-B traffic but NOT directly.

There are a number of factors that can affect the timeliness of this data. Where displayed it always lags behind direct ADS-B data and often hangs in one place for a period.

Direct ADS-B Traffic

Traffic picked up by an in-plane receiver and displayed directly on a device in the aircraft.

The following is based on my experience with OzRunways and some research I did to determine how much trust I should put in the system.

ADS-B traffic is picked up by my “pingUSB” and displayed virtually instantly.

ADS-B data is prioritised over OzRunways traffic. This means if you receive both types of information - the ADS-B data will be displayed over the OzRunway data as it is more accurate.

In practice the two rarely coincide exactly and the OzRunways targets can often be seen to lag behind or disappear for periods.

My navigation display now consists of a map, my position and targets from ADS-B or OzRunways equipped aircraft.

Other aircraft are shown as small round circles with a small pointer showing direction of movement.

They are colour coded to distinguish between OzRunways and ADS-B traffic. Each target contains the callsign and "a plus or minus height figure" showing the height the target is above or below your aircraft.

Touching the target makes it larger for around 5 seconds and display the callsign and ground-speed.

Height Comparison

The height comparison could be quite complex as the OzRunways does not have access to your altimeter setting. In fact the App only has access to your GPS height which can vary from the pressure height.

In the past they have used the local QNH from the internet and your GPS height from the OzRunwys application to compare heights with the ADS-B altitudes based on 1013. This had a number of issues especially if the QNH was unavailable.

The latest Beta test now takes the data from your ADS-B OUT transmission (Received via your ADS-B IN device) and uses this to compare with other aircraft. When this is released to all users it will make the altitude comparisons very accurate. This ensures that the altitude difference displayed is based on the same data items.

If you do not have ADS-B OUT, are using Android or do not know which OzRunways version you are using exercise CAUTION as there are a number of possible errors. Some will be obvious but others are not.

(When the system lost the local QNH one day I had errors of over 1000ft.)

Warning - The comments are based on my use of a beta test version of OzRunways IPad software. They may no longer be current and may not apply to Android software. Other software may work in completely different ways.

Display Summary

In summary my IPad on my knee-pad now displays my position on a map and simple targets representing aircraft near me. Always concious of the need to look out I still believe that the time to glance at this display is much less than with a paper map.

Other software

There are a number of other navigation Apps that include ADS-B and other traffic. AvPlan being one example popular in NZ.

There are also a number of Apps that take data from the "pingUSB" and display other ADS-B traffic. One I have briefly tested is an Android App called "Stratux". This connects seamlessly to

the “pingUSB” and provides a customisable display of traffic nearby. As this added an extra display to my scan I decided not to use it but it is a zero cost option.

A Low cost ADS-B IN and OUT option

In both the UK and Australia the national CAAs have approved use of Electronic Conspicuity devices for flights outside controlled airspace.

An example of such a device is the SkyEcho that provides low power ADS-B OUT and ADS-B IN for around NZ$1000.

Such a device does not meet the NZ CAA requirements for flight within controlled airspace.

Although the NZ CAA apparently have no intention of approving such devices their use OUTSIDE controlled airspace does not seem to break any rules. The ADS-B IN portion of device might be eligible for the grant.

In some recent tests the device appears to work well as a short range ADS-B out and the ADS-B IN integrates with most of the common navigation programs. The device does not have an external aerial so placement in the aircraft my be important for best coverage.

There are good reviews from both the UK and Australia. Any device that helps situational awareness must be useful.

RAANZ may have advice based on contact with the NZ CAA.

Young Eagles

Bill Penman presented a Young Eagles Scholarship to Jake Doyle at the Tauranga Aeroclub. The Microlight club gave a generous donation to the aeroclub as sponsorship of this scholarship and to promote flying to young people.

Membership changes

John Richmond	Stratford Sport Fliers Club	Senior Flight Instructor	Upgrade
Tony Thorne	Nelson Microlight Club	Advanced National	Upgrade
Oskar Stielau	NZ Autogyro Association	Advanced National	Upgrade
Robert Thurston	Wairarapa Aero Club	Senior Flight Instructor	ATO appointment
Anton Dittmer	Wairarapa Aero Club	Advanced National	Upgrade
Max Robertson	Canterbury Recreational Aircraft Club	Advanced National	Upgrade
John Paton	Southern Recreational Aircraft Club	Advanced National	Upgrade
Peter Garlick	Southern Recreational Aircraft Club	Senior Flight Instructor	IA appointment
Michael Crymble	Bay of Islands Aero Club	Senior Flight Instructor	Upgrade
Ross Williamson	Manawatu Aviation Club	Advanced National	Upgrade
Bernard Russell	Whangarei Flying Club	Senior Flight Instructor	ATO appointment
Ryley Fleming	Golden Bay Flying Club	Advanced National	Upgrade
Walter Taber	Wairarapa Aero Club	Flight Instructor	Upgrade
Rory Lindebaum	Associate	Novice	FRTO
Jacinda Johnston	Wairarapa Aero Club	Flight Instructor	FRTO
Jean-Paul Lassale	Gyrate Flying Club	Advanced National	Upgrade
Michelle Polglase	Canterbury Recreational Aircraft Club	Advanced National	Upgrade
John Kowalewski	Manawatu Aviation Club	Novice	Joined
John Scott	Canterbury Recreational Aircraft Club	Advanced National	Joined
Benjamin Augustus Dodd	Canterbury Recreational Aircraft Club	Senior Flight Instructor	Upgrade
Laurence Anderson	West Coast Microlight Club	Senior Flight Instructor	ATO appointment
Brent Mander	Associate	Advanced Local	Upgrade
Carl Portegys	Geraldine Flying Group	Advanced National	Upgrade
Ronald Day	Central Hawkes Bay Aero Club	Advanced Local	Upgrade
Emma Lockie	Parakai Aviation Club	Intermediate	Upgrade
Susan Gaiger	Canterbury Recreational Aircraft Club	Advanced Local	Upgrade
Bruce Magee	Canterbury Recreational Aircraft Club	Advanced National	Upgrade
Duncan McLane	Matamata Aero Club	Advanced National	Upgrade
Juan Rossi	Waikato Microlight Club	Intermediate	Upgrade
Jack Simpson	Nelson Microlight Club	Advanced Local	Upgrade
Kerry Ryan	Stratford Sport Fliers Club	Advanced Local	Upgrade
Michael Abernethy	Parakai Aviation Club	Intermediate	Upgrade
Keith Margan	Gyrate Flying Club	Advanced National	Upgrade
Andrew Simpson	Wairarapa Aero Club	Novice	Joined
Francois Buys	Parakai Aviation Club	Advanced National	Upgrade
Carl Davidson	Canterbury Recreational Aircraft Club	Advanced National	Upgrade
Ben Friskney	NZ Autogyro Association	Intermediate	Upgrade
William Taylor	Matamata Aero Club	Novice	Joined
Hamish McGregor	Canterbury Recreational Aircraft Club	Novice	FRTO
Gregory Stott	Southern Recreational Aircraft Club	Novice	FRTO
Robert Jeremy Waters	Bay of Islands Aero Club	Advanced National	Upgrade
Lochlan Richard Flintoft	Canterbury Recreational Aircraft Club	Novice	FRTO
Mitchell Falconer	Parakai Aviation Club	Novice	FRTO
William Simpson	West Coast Microlight Club	Novice	FRTO
Alan Ross Gordon	Whangarei Flying Club	Flight Instructor	Upgrade
Lukas Lenk	Associate	Advanced National	Upgrade
Charles Milne	Canterbury Recreational Aircraft Club	Novice	Joined
Kar Yung Lee	Canterbury Recreational Aircraft Club	Novice	Joined

Graham Compton	Canterbury Recreational Aircraft Club	Novice	Joined
Siew Yee Chen	Canterbury Recreational Aircraft Club	Novice	Joined
Ross Drew	Central Hawkes Bay Aero Club	Advanced Local	Joined
Brent Robertson	Canterbury Recreational Aircraft Club	Advanced Local	Upgrade
Matthew Clark	Canterbury Recreational Aircraft Club	Novice	Joined
David Mainwaring	Canterbury Recreational Aircraft Club	Advanced National	Upgrade
Enes Fraj	Bay of Islands Aero Club	Advanced Local	Upgrade
John Hood	Geraldine Flying Group	Advanced National	Upgrade
Jordan Van Der Lem	Canterbury Recreational Aircraft Club	Senior Flight Instructor	Upgrade
Daniel Taylor	Wairarapa Aero Club	Novice	Joined
James Hillson	Wairarapa Aero Club	Senior Flight Instructor	Upgrade
William Bartlett	Feilding Flying Club	Novice	Joined
John Lawson	Stratford Sport Fliers Club	Novice	Joined
Wayne Godfrey	Associate	Novice	Joined
Samuel Miller	Associate	Novice	Joined
Ramunas Barakauskas	Canterbury Recreational Aircraft Club	Novice	Joined
Elizabeth Shadbolt	Canterbury Recreational Aircraft Club	Novice	Joined
Armani Hausen	Canterbury Recreational Aircraft Club	Novice	Joined
Denis Chernyshov	Associate	Novice	Joined
Melanie Anderson	Associate	Novice	Joined
Phoebe Wilson	Associate	Novice	Joined
Arran Culver	Wairarapa Aero Club	Advanced Local	Upgrade
Chris Sangster	Associate	Advanced National	Joined
Ibrahim Shafiu	Waikato Microlight Club	Novice	Joined
Ric Springer	Canterbury Recreational Aircraft Club	Novice	Joined
Brian Houghton	Parakai Aviation Club	Advanced National	Upgrade
Boyd Simmonds	Canterbury Recreational Aircraft Club	Advanced National	Joined
Derek Piva	Bay of Islands Aero Club	Advanced National	Upgrade
Rodney Harvey	Gore Aero Club	Novice	Joined
Alexis Maurenbrecher	Canterbury Recreational Aircraft Club	Novice	Joined
Andrew Vialoux	Associate	Advanced National	Joined
Brian Fitzgerald	Canterbury Recreational Aircraft Club	Novice	Joined
Lachlan Glass	Matamata Aero Club	Novice	Joined
Nicolo Parolini	Parakai Aviation Club	Novice	Joined
Yinong Jiang	Canterbury Recreational Aircraft Club	Novice	Joined
Arthur Cooper	Feilding Flying Club	Novice	Joined
David Griffin	Canterbury Recreational Aircraft Club	Advanced National	Joined
Christopher Wenden	Wairarapa Aero Club	Novice	Joined
Thomas Hewitt	Wairarapa Aero Club	Novice	Joined
Jody Mills	Associate	Novice	Joined
Douglas Wallace	North Otago Aero Club	Novice	Joined
Krystelle Ann Syme	Matamata Aero Club	Novice	Joined
David Sale	Canterbury Recreational Aircraft Club	Advanced National	Joined
Blake McCurrie	Auckland Recreational Microlight Aircraft Club	Novice	Joined
Geoffrey Keown	Gore Aero Club	Novice	Joined
Geoffrey Waring	Associate	Advanced National	Joined