Approach

THE NEW ZEALAND AIRCRAFT OWNERS AND PILOTS MAGAZINE

SUMMER 2019

Fly-ins deliver • Models of ownership
Keeping it tidy to keep costs down

AOPA EVENTS • INDUSTRY NEWS & VIEWS • COMING EVENTS AND MORE

Approach

***ISSUE**: SUMMER 2019*

ISSN 2422-8230 / 2538-1083 (*Online*)

Coming events

- *Mid NZ Christmas gathering*
  7 December, D'Urville Island
- *North NZ Christmas lunch*
  8 December, Te Kuiti
- *Healthy Bastards 2020*
  1 February, Omaka
  Register by 24 January 2020
- *SAA Sportaxex Fly-in*
  6–9 February, Hawera
- *AOPA Summer Safari*
  8–14 March 2020
  northern South Island
- *AOPA 49th AGM*
  7 March 2020, Motueka
- *Warbirds over Wanaka*
  1 April 2020

For more information visit www.aopa.co.nz

Cover photo: 2019 Darfield Fly-in
(Photo credit: Cathy Heslan)

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Regular Columns

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Deadline for ads, articles and photos for the next (Autumn) issue: **20 January 2020**.

President's Report

AOPA – Aircraft Owners and Pilots Association of New Zealand. Most of us are pilots, though many family members and partners are keen supporters who don't themselves fly. Some of us own planes, and that is a great privilege. Some do not but love flying, and that is fine. This is the basis of the group we belong to. This magazine's theme – aircraft ownership models – is designed to encourage more aircraft ownership; to explore ways of making it easier and more affordable. I hope you enjoy the read.

As a 45 year old student I had fourteen instructors during my local PPL pilot training. I flew far too many different types of aircraft and then had my flight test on a howling nor-west day; almost scared the pants off me. I came close to giving up. It was not until an aging family friend offered to sell me BZT, a 1960 Cessna 172B, at a very reasonable price that I started to really enjoy flying. My confidence grew due to the consistency of aircraft and frequency I could fly. The ownership was not cheaper than renting, but it gave me a whole new experience and understanding of the plane and what it takes to keep it flying. Aircraft ownership became part of the fun.

This magazine is themed around the variety of ways of owning a plane. The options are as varied as we can imagine. The economical Cub to the exclusive warbird are all out there, and they fulfil different roles and demands for their varied owner members. If you are interested in becoming an aircraft owner, I would encourage you to look around for syndicates that are selling shares. If you don't find one that is suitable, consider setting one up. As an organisation we are committed to encouraging pilots to get into the air in the most convenient and cost-effective way. Go get it.

We've had an excellent spring. Our VNC Map book is racing off the shelves and we have confirmation of $12.5 million Government money available for GA to install ADS-B equipment. At the time of writing we have yet to see the process, but hopefully it will be simple and user friendly. Ian Andrews and I will vie for first in line to get our refunds; we will report progress. The medical review has been promised but not yet seen. CAA's review is now slowing progress down, so don't hold your breath.

Please note we have had complaints that our 'Short Approach' and event notifications are being rejected by some email providers. They are not going into spam. If you are missing these and want the communications it may be worth putting president@aopa.co.nz and admin@aopa.co.nz into your contacts list.

Hope your summer is going well and might catch you at one of our various Christmas Barbecues.

Safe flying to you all,

Steve Brown, President

AOPA News

ADS-B installation grant for GA

In early October, Government announced financial support to help GA aircraft owners equip with ADS-B as part of a new $12.5 million ADS-B Transponder Grant. This is a real success for AOPA and illustrates the effectiveness of advocacy on behalf of GA.

Owners of New Zealand-registered GA aircraft who install appropriate ADS-B OUT equipment will be eligible for a grant of up to $2500 plus GST to help with the costs of installation. The grant will apply retrospectively, with compliant ADS-B installations since 14 June 2014 also eligible.

Deputy Director, Air Transport and Airworthiness, Mark Hughes said the grant money will help ensure general aviation aircraft are able to operate in controlled airspace when the proposed ADS-B mandate takes effect in December 2021.

"Under the proposed mandate, aircraft without ADS-B equipment won't be able to fly in controlled airspace from that date, so it's vitally important that owners equip early so they can continue flying," Mr Hughes said.

"ADS-B brings significant safety benefits to New Zealand's aviation system, so it's great that this funding will be available to help smaller operators to get over the line with their installations, ahead of the proposed ADS-B mandate. The grant will help with the costs of installing ADS-B equipment for approximately 4000 general aviation aircraft on a first-come, first served basis."

To support the uptake of ADS-B IN, up to $500 plus GST will also be available for those who install suitable equipment to give their aircraft ADS-B IN capability.

The ADS-B Transponder Grant scheme will be administered by CAA. Eligibility criteria and details about the application process will be published on the CAA website and sent to aircraft owners when they are finalised. In the meantime, get in touch with your avionics provider promptly to talk about what ADS-B equipment will be right for your aircraft.

2020 diary highlights

Next year's AOPA Summer Safari and AGM are just around the corner!

The AGM will be held at 3.30pm on Saturday 7 March at the Motueka Top Ten Holiday Park Conference room, leading on to the Summer Safari, which will run 8-14 March 2020, taking in Mapua, Abel Tasman, Kaiteriteri, Picton, Benheim and Kaikoura. The schedule includes a plethora of aviation and non-aviation activities.

Mark them both in your diaries now!

Wanaka update

In the next stage of the debate over the future of Wanaka Airport, the Wanaka Stakeholders' Group Inc has filed judicial review proceedings in the High Court. Watch this space.

Getting the lowdown on MET challenges

September's Meteorological Symposium in Wellington touched on a diverse range of issues. Pat Lyford was there on AOPA's behalf.

Topics covered included space weather (for more, see Mark Woodhouse's article on page 19), the changing face of meteorology service provision, international MET developments and upcoming local changes, including new surveillance centres in Auckland and Christchurch, SkylineX system and digital towers, and future SWIM challenges.

In his opening address, CAA Deputy Director Mark Hughes noted how wide, responsive collaboration on meteorological matters can lead to improved safety and economic outcomes. AOPA member Peter Lechner, Chair of ICAO MET panel, spoke on International MET developments, while a Pacific update was provided by James Lunny of MetService and Paula Acethorp from CAA.

In response to discussion the decision was made to hold a series of user workshops to ascertain the broad range of needs and to consider how services can be provided collaboratively to ensure the ongoing safety of the aviation community.

A full report of the Symposium is available on the CAA website.

AOPA's key focus going forward will be to ensure that Met reports are readily available to GA pilots in language and/or graphics that are easily accessible and readily understood, with acknowledgement of the particular challenges for aviators who are less regular users of the system(s).

A warm welcome to new members:

Michael Bach, Auckland, DXI; Marcus Bekker, Silverdale, DXI; Patrick Brennan, Whangaparaoa; Adam Butcher, Te Anau, PIT; Andy Cardno, Wellington; Kevin Collins, Winchester, RGM; John Gemmell, Auckland, JCG; David Hawkins, Picton, MJL; Andrew Hintz, Taupo, DXK; Andrew Jurgens, Auckland; Robin Leach, Auckland, ACO; Don Lockie, Dunedin; John Managh, Napier, DFL; Aaron Pearce, Timaru; Rob Peck, Timaru; Brad Rock, Taupo; Andrew Shand, Napier; Barry Smith, Auckland; Steven Tempelman, Christchurch, EQX; Michael Vile, Hawera; Richard Wallace, Palmerston North, DUN

New VNC charts out

Don't forget that all the new VNC charts were released by Airways on 6 November – and a great way to utilise them is via AOPA's new A4 version, available to members at a discounted price. Sales are brisk, so get in now to get your copy. Details on page 5.

From the Vice-President

Hopefully by the time you read this the winter that was slow to arrive then outstayed its welcome will finally be gone and good flying will be happening.

With the theme of aircraft ownership running in this issue, I was asked, as the amateur-built owner on the Executive, to give my opinion on the subject. Common problems and decisions occur when you venture into ownership of any aircraft.

The variety of amateur-built aircraft is as diverse as GA, so it is a case of horses for courses and budgets, before one even starts to think about whether one has the skills and time to create a flying machine.

The ability to go to a factory in the US and have a kit built with assistance has been a major factor in the number of amateur-built aircraft currently flying. Some say that if you can make the tea (oh, and pay the money!) you can push one out ready to fly two weeks later. It's not quite that simple, but skills are actually not the biggest handicap. With patience they can be learnt. Patience, not always!

Time, time and more time is a problem for most. A very understanding partner and family are very necessary. Neglected spouses have been known to find other interests...

It's a mistake to think ownership of an amateur-built is a financially easy option. It will still cost a lot more than you wish. Ask my wife!

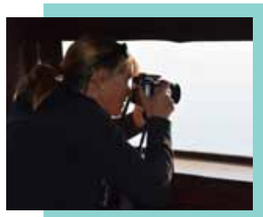
Access to cost-effective avionics is one of the big pluses. With a maintenance ticket you can keep some costs down, but most of us find we still need a good relationship with a LAME to remain safely in the air.

Over the years there has been a great deal of disdain from certain areas of the GA community re kit aircraft. That has changed somewhat with acceptance of the quality, performance and ability of the better marque of amateur-built. The technology of a new aircraft, and the comparative cost of a young aircraft against a 60 year old machine, has had an influence on this.

My advice, if you are contemplating a kit, is that you first look at your mission. Look for a kit manufacturer who will be in business long-term (you will need parts in the future). Read everything you can about the aircraft you are contemplating buying. Question your investment in it. Is it what you want to fly? Will your friends and family share it with you? Is it saleable when you want or your family want out in the future?

Obviously I'm a convert. Give me a call if you feel I may be of help. I'm sure Marie will put you on the correct track!

Graeme Donald, Vice-President



From the Editor

Most of my flying over the last quarter has been done on long-hauls, where the only resemblance to the single-engine fixed-wing experience is that you get from one place to another. Eventually.

Unfortunately a combination of weather deferral and my commitments overseas meant that I couldn't make the Omarama and Darfield fly-ins. Our articles on these gatherings highlight just what I missed. Hopefully I'll get along to one or two summer events.

This issue's theme is models of aircraft ownership, with the in and outs of several variants ably highlighted by our contributors on pages 12-17.

Next time we'll explore avionics upgrades – and what a great example October's announcement (see page 3) is of last issue's theme: AOPA's role in advocating for GA. Well done the CAA, for recognising compelling argument and doing the right thing, and well done all those who played a part in speaking out on behalf of GA.

Keep it safe and enjoy your summer flying.

Anna Mackenzie, Editor

Letters to the Exec

Hi Ian,

Firstly my thanks and appreciation for all the work you and others in the AOPA have put in to achieve such a fantastic result on our behalf. The work and effort required to reach this conclusion must surely have at times seemed insurmountable.

We operate a C180 ZK-KRM. We have ten people in our partnership. Six are current or ex airline pilots, so the value of TCAS/ADS-B was a no brainer to us as a group.

We completed our ADS-B installation early in August. We opted for both ADS-B out and in. We installed a Garmin GTX345 and changed our Garmin 296 GPS for a Garmin Aera 660 GPS to display the traffic. Mid installation we were lucky enough to be offered a traded in 660 as well, so we have ended up with two x 660 GPSs, one of which we can use as a full-time dedicated traffic display. In the circuit area at AR it has already proved its value.

The other great AOPA success is the VNC maps. Whoever drove that idea needs a medal. The concept is so much commonsense, how come it wasn't thought of years ago by the Authorities?

Again it has obviously taken an organisation like the AOPA to use a bit of lateral thinking to achieve a fantastic and commonsense result.

Thanks again to all concerned.

Kind regards,
Eddie Collett, KRM Partnership.

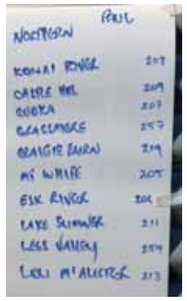
‘Strait’ on to Darfield

by Steve Shepherd

Over a quiet beverage at the Aero Club bar one Wednesday evening, Hamish Ross said he had a spare seat for the AOPA Darfield fly-in over the coming weekend, and that the weather was looking good. Being a fresh AOPA member, it seemed a great opportunity, plus it was a few years since I’d done a Cook Strait crossing.

I snuck out of work Friday afternoon and we were airborne from Bridge Pa at 12:30pm in Hamish’s C182 ZK-BHP with our life jackets on, en route Rangiora. The forecast was showing a slight headwind with the southern Wairarapa forecast for a bit more lower cloud that Kapiti; apart from that it all looked good.

We tracked through to Dannevirke then crossed over the hills



just south of the Balance Radar Dome and out to the west coast, tracking inland of Paraparaumu through the MBZ; all smooth sailing with about a 10kt headwind.

We dropped to 2500ft to stay below the Wellington Control space and avoid undue complications, but we did talk to Wellington Controllers and requested radar monitoring, and they seemed happy to give us a squark code. Always good for peace of mind when crossing the Strait to know the controller is following you. The wind picked up to a 25kt headwind as we crossed, and conversation turned to the usual question about engine failures and landing into wind/swells or side on to the swell.

The trip down the east coast of the South Island was pretty uneventful, no whales to spot at Kaikoura and not much aircraft traffic. We landed at Rangiora on schedule and, after a wander around a few hangars and a cup of tea, gassed up and headed for Charlie Draper’s Darfield strip.

Saturday morning at the Draper strip was pretty busy with aircraft arriving thick and fast, around forty in total, in time for the 9am briefing. We selected the northern option with Paul Hood as our designated leader and around eight aircraft in the group. The route was to take us up the Waimakariri river for a few strips then back to the Plains to the north.

I had already downloaded the AOPA Fly-in Strip app to my iPad, so duly noted down which strips we were to do then

manually loaded the GPS co-ordinates into my AvPlan app. Maybe next time I’ll have to figure out if I can do a bulk import into AvPlan. The iPad was great and it would have been a serious challenge finding some of the strips on the plains without the GPS coordinates.

The weather was awesome and flying up the river with snow on the mountain tops was just spectacular. Arriving at the first strip number three, we found the first two aircraft mustering the sheep into one corner. We duly landed and we were joined by a further three aircraft, however our designated leader was nowhere to be found. A quick phone call found him at the next strip, having decided to avoid our strip due to the sheep.

Next stop was Castle Hill. The strip was in a shortish lucerne paddock, below rock formations that make it is easy to see where the Castle Hill name comes from. The following strips were of various configurations and surfaces, including Avoka, which was seriously rough and looked like it had been recently harrowed, leaving melon-sized rocks up and down the stip. The strange thing was there was a huge roller next to the strip which could easily have made things much smoother. Perhaps no one knew people still planned to land on the strip.

After the hills we headed back to Lou McAlister’s strip for lunch and a nosey around his museum. Hamish and I were first aircraft this time and, having tracked to the GPS co-ordinates, it was a case of picking the right shed and paddock. The windsock in the paddock corner helped our selection. Lou’s collection of old tractors, cars and stuff was great and we were back to about four aircraft in our group as a few of the others had headed to strips higher in the hills.

After lunch we headed north to do a few strips across the Plains: The Triangle (Masons Flat) and all the way up to Montrose, which had us almost three quarters of the way to Hanmer Springs. We then tracked back to Rangiora for gas, managing to find an additional strip, not on our list but as it had a couple of aircraft parked on it we went for a look.

The evening event at the Rugby Clubrooms was a great end to a great day, offering a chance to unwind and share stories, and for me to meet a bundle of new people. Hamish and I made a rookie mistake, having failed to realise it was BYO, but nothing a quick trip to the local Four Square couldn’t rectify.

Sunday morning we were back at the Draper strip readying for departure. Some very low cloud seemed determined to stick around as long as possible (a normal Canterbury phenomena?), but eventually a few holes started to appear. We loaded up and got on top of the low cloud base then tracked inland, where it was clear, and towards Hanmer Springs then onwards towards Ward Pass at about 5000ft.

The weather was still great and we tracked for Lake Grassmere then Ferry, this time getting clearance through the control space to keep our 4000ft. Not much wind this time, maybe even a bit of tailwind. We then tracked pretty much straight line for Hastings, arriving about 12:30pm having been in the air for 2½ hours.

All in all a great weekend with great weather, great flying and great people. I’ll have to make sure I get to more of these AOPA fly-ins. Thanks to the organisers for an excellent event.

Winter fly-in (finally!)

Weather saw the AOPA mid-winter fly-in at Omarama deferred from July to early September – luckily for Lucy Newell, who signed up at short notice for her first ever fly-in.

The morning was crisp, the air still, the wings frosty. Even wearing five layers, I still shivered with cold – having just returned from a summer in Canada, I was not yet re-acclimatized.

Brian Hore had kindly offered me the right seat in his beautiful 206, ZK-NOK. Not one to miss such an incredible opportunity, I happily accepted and on the morning of the 7th found myself sitting in the briefing room of Glide Omarama, assessing weather and studying routes. We had four to choose from and, after some deliberation, decided on the longest: thirteen airstrips! What was particularly interesting about this option was that I had not previously been into a single one...

Omarama Airfield is usually a quiet place, nestled at the southern end of the Mackenzie Basin. Normally ruled by gliders, it is host to Glide Omarama and its fleet of twelve silent birds. However, on this morning, it was far from silent. The noise of 28 aircraft doing run-ups and subsequently taking off permeated the air – an awesome sound and sight, for those not trying to sleep in.

Strip number one was Ben Dhu, located to the northwest of the field. The 206 burns a few gallons more gas than others so, due to a delay getting the important stuff, we arrived at the first strip at the back of the pack. But no matter, the 206 is also fast…

After receiving a briefing for the second airstrip, we were off once more. Strip after strip: Ohau Lodge, Maitland, Glen Lyon,

Ben Ohau, Braemar, The Wolds... We zigzagged our way north up the Basin. Lunchtime found us looking down on Lake Pukaki beneath the splendour of Aoraki/Mt Cook.

The flying was a lot of fun – inevitably, perhaps, with mountains like the Southern Alps as our playground, though even had it been flat and featureless, the people would have made it a great day out. At every stop there was another story, another joke, more fun, more laughter. It may sound cheesy to say the people made the day, but it's absolutely true!

After a tasty lunch we were off once more: Glenmore, Smalls, Kurow (where I did three circuits in a C172), Black Forest then on to Haldon. Another five strips down and we weren't done yet! The afternoon matched the morning, with great flying, great chat, great people.

One of our group, aware that prior to my Canadian trip I was working as a B-cat out of Wanaka Airport, asked if I could accompany his son for the last leg of the trip in their C172. I'm only too happy to help new pilots build experience, and when better to do it than after a day of strip flying? For the remainder of the day I was an informative right seat passenger (ie, an instructor) as Anthony departed Haldon Station, completed an overhead join at Pukaki for a touch and go then continued on to Omarama.

Hard to believe that after flying for five years, this was my first fly-in. It was a fantastic day of new friends, many photos and many laughs. Although I couldn't stay for the second day, I'm so glad I didn't miss the first!

Thanks to all who put the hard work into organising the event; I'm already looking forward to the next.

Omarama delivers

By Rob Peck

Hard to say what was going through my mind as I mysteriously found myself raising my hand to Murray Paterson's request to write an article at the conclusion of yet another fantastic Omarama fly in!

Could it have been the discomfort of the awkward silence that followed? Was it the expectant eyes scanning the room like a bird of prey ready to strike? Or was it, possibly, a subconscious desire to avenge a story that had previously been written about, say, an AOPA adventure in Hanmer Springs?

Whatever the motivation, the story begins with an invitation that Ian Sinclair, referenced throughout this article as SINX (**S**elf **I**mposed **N**ana e**X**ecutive), extended to me to fly our beloved Omarama region.

Departure day dawned average with weather expected to deteriorate, but it was the third attempt so the event was happening regardless. Arriving at SINX' place around lunch time, I found COL looking smart following a wash and dung out. The usual pre-flight and we were airborne, heading to Arch King's strip, where we welcomed him aboard for the adventure. Mackenzie Pass was clear at around 2pm but later got messy as a system pushed in from the north, but for those who made it into the Mackenzie early, the flying was very pleasant.

We joined traffic into Omarama over the Ohau turn-off and made our approach to the airfield. Not all went well with my final descent onto 09 as we encountered sink in a crosswind with insufficient power and an ever vigilant SINX stated 'I have control' and corrected the rookie's mistake.

Now, a lot of pilots would have left it at that but SINX, having the aviation nurturing nature, unloaded COL and took me on a cross-landing refresher finishing with his ever familiar comment: 'Every one you walk away from is a good one'. Despite my attempts to take the piss out of him at every opportunity he does have his moments!

Back on the ground we greeted familiar faces and tossed about the usual friendly banter before launching into organisational duties such as lugging gear and securing aircraft. Spying Murray's John Deer Gator, or 'Land Chopper' as he affectionately calls it, and thinking it looked like a sweet number, I waited with the stealth of a leopard until Murray's back was turned before pouncing into the driver's seat where I remained, posing as the official 'meet and greet' for the remainder of arriving pilots.

The essential drinks and natter preceeded some great tucker and accommodation at the Country Time Hotel, wonderfully based on the airfield, with the town only a five minute walk away.

Saturday dawned a blue sky day with a frost to match. Breakfast at 7am was splendid, until I bumped into Murray looking for his Gator (which I had managed to park in the most frozen spot of the entire Mackenzie Basin).

Briefing at 9am saw The Wise Men gathered to outline proceedings for the day. With weather-reduced numbers, but still around 30 aircraft, we split into three groups: one lot heading over to the West Coast, others down and around Central Otago, and a gaggle remaining in the Mackenzie Basin with SINX as our designated leader. Our group was joined with Shaun Gilbertson's group which brought the number of aircraft to six, which proved ideal given the strips we visited.

A lot of ground work had been done by SINX and other members of Executive, with all strips GPS mapped and numbered in an App-based presentation which made the strips extremely easy to locate. At each a process was worked out that identified the direction of the circuit and any hazards that could be expected. Shaun volunteered to land at all strips first and to use a handheld radio to report back anything not obvious from the air, while SINX flew tail-end Charlie to ensure all fledglings found the nest. It seemed to work well as we completed a total of sixteen strips with various levels of difficulty, most of which were outside the skill base of this rookie.

Rather than babble the death out of the day I have compiled a list of strips, with approximate elevations in feet asl: Ben Dhu 1880, Ben Dhu Fert 1900, Ohau Lodge 1800, Maitland 1900, Glen Lyon 1900, Ben Ohau 1800, Braemar 2400, Glenmore 2700, Smalls 2100, Haywards 1900, Table Top 1300, Meyers Pass 2900, Kurow River 800, Otamata Station 1300, Black Forest 1300, Haldon 1400, Haldon Fert Strip 2600.

My favourites were Meyers Pass and Haldon Fert Strip, both of which required some skill to execute. Kudos to SINX, who managed to endure continuous heckling and unsolicited advice from his co-pilot. As much as I tried to rattle his cage, his attention never wavered from the job in hand. I can only conclude that he had a manual mute on my headset mic, as I would hate to think he has developed some form of immunity.

More socialising finished off a fantastic weekend. Gavin Wills gave a great talk on the history of gliding and the role Omarama has played in that industry.

I tip my hat to all involved in organising such a brilliant event.

Sunday morning presented declining conditions so all were soon underway. Fair to say that during our journey through Burkes Pass the co-pilot was on best behaviour, grateful to be delivered home safe and sound a little after 1pm. Job done on another successful adventure.

Buying into the dream

Owning an aircraft is not an uncommon dream. Partnerships and syndicates offer tried and tested alternatives to owning outright, with the benefits of reducing individual capital outlay, sharing ongoing costs, and ensuring the aircraft does enough flying each year to keep the hourly cost reasonable.

Partnerships are one option, and can range from formal legal agreements to relatively informal arrangements, especially when there are other ties between the inidividuals involved. Syndicates come in all shapes and sizes, and offer various options for managing flying time and sharing costs, with the most successful generally based on having an amenable group and a solid legal agreement.

We canvassed the views of five AOPA members who have been involved in shared aircraft ownership arrangements. For their experiences, read on.

And if you're thinking of taking the plunge, don't rush your decisions, talk everything through thoroughly, ensure all members of the group are on the same page. Everyone we spoke to agreed that communication is critical.

The CAA's publication *'How to be an aircraft owner'* offers sound advice on syndicates and on ownership generally, while a number of aviation websites also offer helpful guidelines.

There are plenty of opportunities out there: ask around; look on TradeMe; if a warbird is your want, check out the warbirds website, there are generally shares in a variety of aircraft up for sale.

Access to classic aircraft

Don Ryder years ago had the opportunity to join a three-person partnership owning Tiger Moth ZK- BLV, which proved a great success.

When one of the original partners in the BLV syndicate succumbed to a motor cycle accident, the remaining two, feeling three was a good number, started looking for a new partner. A complication was that one of the partners lived in Napier and the other in Wellington. Syndicates generally work better when all members live in roughly the same area, as it reduces the chance of friction arising from access/availability conflicts. As it happened, Bev and I had properties in both locations and moved between the two, so the arrangement didn't leave either of the original members feeling outnumbered.

Our Tiger was a very original old ex-RAF trainer which was nordo, so over the next several years, one or other of us would mainly fly it back and forth from Masterton to Hastings – keeping under the radar.

Eventually our Napier partner passed away and we picked up a new Wellington-based partner who had heavy business commitments and also had to get a Tiger rating. This meant that for some time most of the flying was done between just two of us. As fate would have it, our most recent partner then became permanently based in Australia and eventually decided to sell.

I'd known AOPA member Simon Dartford for some years, originally through motorcycle racing, and he became our new third partner. The partnership continued until I decided that I was simply not doing enough Tiger flying to feel comfortably current (as well as finding it a bit cold in my advancing old age!), so I sold my one third share to Simon. At the same time our remaining partner, now living off-shore, also sold to Simon, so the BLV Partnership is no longer. It is very satisfying to know that the single owner is quite a bit younger than most of us Tiger pilots, so the batten has been happily passed to the next generation.

The great aspects of this partnership for me were that having had no prior experience on the type, I had two very well qualified partners to rely on for help and advice (both technical and flying). Having been a keen motorcyclist, I did know about magnetos, but still had to learn all about taildraggers, new start-up techniques including swinging the prop, and new flying techniques like spinning and side slipping.

Then there were all the unique peculiarities that each individual Tiger has as part of its own personality. I would have found it very difficult to reach a competent level of Tiger flying without the encouragement and camaraderie of my two partners (plus the invaluable help and advice that Jan Chisum always offered throughout the time that I was involved with BLV).

It was very reassuring to have two reliable partners with whom I could discuss and debate any maintenance or other matters relating to the operation of an old, sometimes temperamental aircraft.

In my experience, a partnership of three was ideal in terms of everyone always having access to the aircraft when required, and the odd number ensured that any uncertainties were resolved by a simple majority vote. For this reason, I would consider five partners (another odd number) as probably the maximum for a successful partnership for this type of aircraft.

Interestingly, for some years I was also one of nineteen members of Ross Ewing's syndicate who owned the Vampire ZK-VAM, although in the end this group struggled to keep their heads above water financially, and we found that nineteen was not quite enough to ensure that all the bills (both planned and unexpected) were able to be met on an ongoing basis. This eventually led to the sale of VAM to one of the members.

So, it's horses for courses when it comes to the ideal number of members in any given aircraft syndicate.

Certainly for me, trying to operate a military jet aircraft with just a few partners would have been out of the question. Neither would I have liked to have been all on my own with a Tiger Moth. On the other hand, I managed very well as the sole owner of a very nice C182 for many years – although even then, once I retired, it might have been quite handy to have somebody else to pay at least 50% of the operating costs.

Aircraft ownership is an incredibly rewarding experience, and those of us who are fortunate enough to do so are extremely lucky. Think (and plan) carefully about how you might like to get involved with a new or existing aircraft partnership. Talk it over with your AOPA mates (and your life partner) as well as anyone you know who already operates in a syndicate.

The partners that you sign up with don't need to be your best mates, but they do need to be people with whom you know you can build an ongoing relationship of trust and respect. Make sure that you read very carefully and fully understand the agreement that you will be signing. Seek help with this if necessary. Unwanted surprises can easily spoil the whole thing.

In closing, quoted below are a couple of lines taken directly from the somewhat casual and friendly original BLV Partnership agreement that stood us in good stead for many years (and no straws were ever drawn!):

- Conflicts will be decided by discussion
- In the event of conflict over which partner(s) should have the use of BLV for a particular event or at a particular time, and discussion does not resolve the problem, then straws will be drawn, not swords!

Aircraft type: DH82-A Tiger Moth
Syndicate formed: 1992
Number of shares: 3 equal

Four-strong Warrior syndicate

In 2015 **Wayne Summerfield** and a mate were having a conversation, and up popped the subject of aircraft ownership. They'd both had PPLs for some years and agreed they liked the idea of owning shares in a plane.

Aircraft type: Piper Warrior PA28 - 151 (with 180hp engine)
Syndicate formed: December 2015
Number of shares: 4 equal

I started looking at TradeMe, and within no time had spotted ZK-TGF (as it was at the time) for sale in Auckland for $60,000.

We got in touch with the advertiser, asked questions about the aircraft and advised him that, ideally, we would like to get a syndicate together.

After gathering a bit more info and a few more photos, we decided it was definitely worth a trip to Auckland to see her 'in the flesh' and go for a spin. I arranged for a mate who has vast experience in flying all types of light aircraft to come with me to give his opinion on TGF's performance.

In the meantime there'd been a number of expressions of interest in TGF via the TradeMe ad, and the vendor had mentioned to each that we were keen to set up a syndicate. It transpired three of the interested parties were from Canterbury (one turned out to be someone I knew) and they all liked the idea of joining a syndicate. Things were looking promising.

We all got together for a meeting. Four of us already had PPLs and one was in the early stages of training. I gave them all a rundown on what I knew about TGF and how well she flew. We found we got on really well and our personalities seemed pretty similar (an important thing, as we were to find out a few years later). By the end of the meeting, there were three of us keen to complete the due diligence and get an offer on the table, while the other two decided that they weren't quite ready to commit to ownership.

With due diligence completed we were about to present our offer when we had contact from another person keen to be part of a syndicate. We gave him the rundown, met with him and he liked what he heard. Bingo! We had a syndicate of four: a self-employed ag contractor, a pilot, a farm consultant and a lawyer. Turns out it's very handy having a lawyer in a syndicate when it comes to offers and Sales & Purchase Agreements. We presented our offer and it was accepted. There was one condition though: the vendor wanted to keep the rego (at his expense, of course).

E-mails flew over the next couple of weeks, sorting out a new rego, setting up a bank account, fuel card applications, hangar lease agreement, insurance, etc. We each took on roles within the syndicate that complemented our own skills (legal stuff, finances, maintenance scheduling and control, billing) – it all fell into place nicely, and still works well today.

As far as booking of the aircraft goes, we found a free booking system called Shlott (previously AirChunk), which you can find by going to www.shlott.com. It's simple to use, with each member able to see when the plane is booked, and it's easy to cancel your booking should you decide to do so. As an extra measure we also text each other re the cancellation if it's cancelled on the day for which it was booked.

For invoicing, we use a free programme very similar to Xero and MYOB, which was also found on-line.

Towards the end of last year, one of our original syndicate members advised that he wanted to sell his share in ZK-DBW. An ad was placed on TradeMe. There was a response from a guy who'd been at our original meeting (pre-purchase) who was now keen to buy in, but after discussions we felt he wasn't an ideal fit with our happy group. The next person who responded to the ad has now been in the syndicate for just over ten months and has proven a great match.

The process for the share change-over wasn't too painful, just requiring change of details with the bank, insurance and fuel card suppliers, plus a Sale & Purchase Agreement between the departing shareholder and the incoming shareholder, and we also completed a Deed of Accession that all shareholders, including the departing one, signed.

Each member of our syndicate feels really fortunate to be part of such a great group. I put this down to our respect for each other and the aircraft, and being mindful when it comes to bookings. Conceivably in establishing a syndicate you could sell shares to anyone with the money, but in our experience it pays to be a little more thoughtful, as financial wherewithal alone may not generate the best outcome.

Adversity brings opportunity

When **Geoff van Asch**'s baby (ZK VAN) was damaged on the ground at Ashburton in 2017, the opportunity presented to fly a privately owned Piper Super Cub based at Omaka. It proved fortuitous.

Aircraft type: Piper Super Cub
Syndicate formed: 2017
Number of shares: 2 x ¼, 1 x ½

It dawned on me that for the sort of flying I was doing – AOPA fly-ins and away from AIP listed airfields – there wasn't an on-line aircraft at Marlborough Aero Club that fitted my needs. I could keep flying the Cub or look for other options…

Over a beer I made it known to the Cub owner that if his Cub was ever at risk of leaving Omaka, he should talk to me. A couple of months later I received a text: "Do you have $$, are you interested?"

Well, I didn't have the $$, but yes, I was interested. I made a phone call, and it turned out it wasn't the Omaka-based Cub but one in the North Island. I asked the first question: "Why is it for sale?" Turned out the man had two and didn't need both.

I still didn't have the $$ and hadn't even broached the discussion with the domestic controller. In my day job I'm a chartered accountant and give advice to clients: "If it is the right idea, don't worry about financing, it will finance itself."

I put the thinking cap on and began considering who might be interested in a quarter share of a Piper Super Cub. It didn't take long. Within 24 hours four of us had raised our hands. Not everyone knew each other, but over a beer we aired the process and had a general chat to see if our collective interests were aligned.

Within 48 hours from receiving the text we had confirmed our interest, moving with enough urgency to get our nose in front with first right. Now we needed to test drive, needed an engineer to look at the logs and have a peep at the aircraft.

We got the aircraft to Omaka that weekend to test fly. All four confirmed we were in and the engineer said 'go for it'. Inside a week we had purchased an aircraft as a syndicate. Now we had to make it work.

Two and half years on, the syndicate is still going just fine. Why?

Communication, communication, communication. It must be top of the list. If someone has an issue, talk about it. Surprises cause upset.

At the start we canvassed the idea of a formal syndicate agreement, a document I would normally push for, but we agreed to operate without one, basing the arrangement on trust and communication. To date this is working well, but that is us. For this to work, you must have trust.

We have an on-line booking system using Google calendar.

Financially we operate with:

- Monthly fixed cost that covers all the fixed costs, whether she goes flying or not, so insurance, fixed CAA annual costs, an annual by a LAME with a bit of loading on (that allows incidental costs to be covered that maintain the investment in the aircraft), that is paid by all on the quarter share investment;
- An hourly hire rate that covers normal R&M, fuel and general running costs, so whoever is flying pays the costs related to that flying. This gets invoiced when the accountant gets to it.

We have an annual get together, let's say an AGM – more beer. And if the worst should happen, whoever is flying has the insurance excess to deal with the situation, and more beer to pay for.

A couple of final points:

We have had one quarter share exit, amicably purchased by an existing quarter owner giving them a clean half. Again, open communication is key.

With four instructors named on the insurance, we have allowed a couple of others to use the aircraft, with open communication. A couple of us have 16 year old sons who have been allowed to do ab-initio training. These two pay a slighter greater cost to cover insurance. Better they use the Cub than a Rebel or 185 to learn and get those feet moving.

And finally on communication, the domestic controller is fully in the discussion loop – now.

Syndication: the CXC story

Aircraft type: Piper Super Cub
Syndicate formed: 1987
Number of shares: 11 equal

In 1987 **Keith Vallance** and seven other local aviation enthusiasts were offered an early Piper Super Cub, 90hp engine and no flaps.

We formed a syndicate and purchased Super Cub CXC for the princely sum of $24,000 from two local owners, one of whom was an Air NZ engineer who produced the log books and an X-ray of the fuselage tubing showing no internal corrosion. A good start.

CXC was in tidy condition apart from the cotton fabric, which was showing signs of age, and a second life engine with around 300 hours to run. It was fitted with the standard drum brakes, which were pretty ineffective to put it mildly.

CXC was initially hangared at a neighbouring farm with an interesting airstrip situated on the edge of a cliff with a bend in the middle and a very steep fall to one side, which took some getting used to. Eventually we acquired a section on the Rangiora Airfield on which we built a new hangar. The syndicate members provided the labour, built the doors and trusses and assembled the building. The permit was through in a month – a far cry from today.

CXC has performed well for us over 32 years. Major work, including recovering the fuselage and wings, was mostly carried out by syndicate members under the supervision of an engineer. Larger wheels and tyres with disc brakes were fitted (a huge improvement), and it has seen at least three reconditioned engines and recently new lift struts and fork ends, which do not require an X-ray every four years.

CXC is a joy to fly; very light on the controls with good fuel duration of 5.5 hours.

CXC averages 75 flying hours per year with all sydicate members paying for a minimum 10 flying hours per year whether they use it or not.

At the moment the hourly rate is $95, which covers maintenance and fuel. Our charge out rate is sufficient to accumulate the cost of engine overhauls when they become due. Insurance and rates are paid yearly by the now eleven owners.

Our syndicate has operated very successfully for 32 years due, in our opinion, to having a good set of simple rules and operating procedures.

Rostered usage: The syndicate works on a seven day roster system. During each member's rostered week, he or she may make whatever use they wish without the need to consult with any other syndicate member. Where a member wishes to use the aircraft at any time other than during their own rostered week, they must first obtain approval of the rostered member. Any member may use the aircraft at any time without the approval of the rostered member, so long as the aircraft is only used for circuits at Rangiora or a short local flight of no more than 30 minutes.

Approved pilots: Members only may fly from the front seat. All syndicate pilots must have a PA18 rating and must be approved by the syndicate.

Aircraft uses: Our policy precludes hire of the aircraft, commercial use and abinitio training.

Sale: The sale of any syndicate share must be approved by the syndicate.

One of the many advantages of our roster system is that each week a member is always responsible for the aircraft and knows where it is and when it will be back in the hangar. One of our members (Doug Hall) acts as secretary, keeps a set of accounts and schedules the maintenance with our top maintenance engineer Pat Scotter on Rangiora Airfield.

If you're considering syndicating an aircraft, based on our experience, go for it. Eleven members seems to be ideal as it covers the costs and very rarely is the aircraft unavailable when you want it.

Paths to ownership

After gaining his PPL and flying Aero Club planes for a few years, **Hamish Ross** found his desire to travel further afield gave rise to a problem: it was difficult to book a Club plane when you wanted to take it away for a week or more. It became apparent that, one way or another, he needed his own plane.

Not being able to afford the outright purchase of a 172, I began with a simple partnership with my brother-in-law, with the agreement being simply owning the plane 50/50 and sharing the costs equally. This somewhat informal arrangement never gave rise to any problems. Our joint decision to make the plane available to our local Aero Club (putting it 'on line') helped cover the fixed costs and also provided income for upgrades – and it was still available to us most of the times we wanted to fly, with no problem in booking it for an extended period.

In response to changing circumstances I purchased the other half share and continued the lease with the Aero Club, with the Club using it for around 200 hours per year. This worked well for about eight years until it was time for something new. With the proceeds of the sale I was able to purchase another aircraft outright for my use only.

Over time the need came for a faster (and less draughty) plane to transport the family to the South Island. As I would only need this type of aircraft for cross-country flying, the obvious answer was to be able to lease one or use an Aero Club plane; alas the Aero Club did not have anything suitable, so it was back to the market. As this was a jump in price and operating costs, I again looked at ways to defray some of the costs and the plane was made available to the local Coastguard Air Patrol. This arrangement worked well over the next five years.

Now convinced of the viability of operating a higher cost aircraft, it was time to move back to sole ownership with the sale of one and the purchase of another from Australia.

In my experience and in observing other groups, joint ownership with like-minded people works well. Leasing to an Aero Club can also work, but only if you accept that others may not always treat the aircraft as you would – if it is your pride and joy, don't do it.

Aircraft have always been, and will always be, expensive to own and operate, but there are ways to spread the capital and ongoing costs to allow you to enjoy the flying you do, whether this lies in the pride of having your own aircraft, or in the camaraderie and support offered by joint ownership. Group ownership can also provide access to several different types – because we all know that everyone really needs at least two aircraft.

Aircraft type: Cessna 172/ C182
Partnership formed: 1988 & 2001
Number of shares: 2 equal; plus leases to commercial operators to defray costs

Thoughts on safety *from Paul Hood*

Safety stands high on the list when owning an aircraft.

Having a safe aircraft starts at servicing and maintenance. As an owner it is your responsibility to make sure your aircraft is maintained and serviced to CAA law standards. There are hour and/or date trigger points, so keep a close eye on the maintenance logbook. Your maintenance engineer can help with this. Choosing a good aircraft engineer is important. While price is a factor, you need to have a good relationship based on trust. That is not to say that if anything major needed to be done you shouldn't get a second opinion.

Your maintenance engineer will also carry out the biennial airworthiness review, which is in effect an audit of the aircraft manual and logs. This used to be an annual check, but thanks to AOPA advocacy and lobbying it is now biennial.

By law the flight manual and tech log should be carried in the aircraft at all times. The things that must be contained in the aircraft are Certificate of Airworthiness, Certificate of Registration, Weight and Balance, Radio Licence and a Flight Manual. Also, by 31 December 2021, below Flight Level 245 in controlled airspace you will require a minimum of ADS-B out, so with the CAA's recent announcement of a $2500+GST subsidy there is no excuse not to get on with it.

If you have an ownership share in a syndicate you should also make yourself familiar with the Manual and Log. Remember, accurate logging of flights is a legal requirement.

Between services it is the owner's and pilot's responsibility to carry out thorough pre-flight inspection. These inspection processes are laid out in the aircraft manual. You may have your own routine when it comes to pre-flight inspection, and as long as it covers everything in the manual pre-flight, that is fine. If you identify any defects that need addressing at the next service, these should be recorded in the tech log, and if they makes the aircraft unsafe to fly, **don't fly**.

It is that time of the year when, if your aircraft is parked outside or in a hangar that is not bird proof, you need to be particularly thorough about checking for any nesting in the engine bays. Nests and hot engines aren't a good mix in the air. Cowl muffs are a good option. Pitot covers also provide good protection from mason bees nesting.

If you are in a syndicate, the syndicate will have it own rules, to which you must adhere. Alongside these, always remember to leave the aircraft in a state in which you would expect to find it.

While insurance is a personal choice, a lot of fly-ins require a minimum of third party cover. Third Party cover is an absolute requirement for any AOPA gathering. DoC (Department of Conservation) has a minimum of $1,000,000 public liability cover to fly into any of their strips.

Safe flying and remember: you don't have to be an aircraft owner to be a member of AOPA.

Fallibilities of GPS

By Mark Woodhouse, Waypoints Aviation Ltd

There is no doubt that GNSS (Global Navigation Satellite System), more commonly referred to as GPS, is a highy valuable part of modern life, from navigation to time keeping. And it is virtually bullet proof… Yeah right! GPS is far from infallible.

Most readers will be aware of GNSS and many will have used the system to navigate. What you may not be aware of is how prevalent GNSS is becoming, and the vulnerabilities to which you, as pilots, may be subjected.

Due to New Zealand's geographical location we usually have relatively high visibility to six of the current satellite systems. These include the United States' Global Positioning System (GPS), Russia's GLONASS, Japan's Quasi Zenith Satellite System (QZSS), the European Union's Galileo System, China's BeiDou Navigation Satellite System (BeiDou) and the Indian Regional Navigation Satellite System (IRNSS), although the European and Chinese systems are not expected to be fully operational until 2020. Each system contains multiple satellites orbiting in medium Earth orbit at about 20,000km asl, and can normally be used by land, sea and airborne users in all weather conditions, anywhere and anytime.

GNSS works on different frequencies, at roughly 2Hz, so current aircraft avionics will only receive the tuned satellite system. That said, there are receivers in development that will be able to receive most of the various systems on their various frequencies. There are a few limited satellite systems that are regionally based (India for example), that are purely for the 'local' national area.

Currently, standard GNSS technology typically allows for positioning to within 5-10m accuracy, but with a SBAS (Satellite Based Augmentation System), accuracy will be improved to within 3cm in areas with mobile phone coverage and 10cm everywhere else.

But can GNSS be jammed? Oh yes! Considering the weakness of the signal that reaches your aircraft from 20,000km away, this should be no surprise, but it is seldom talked about.

In a major NATO exercise in the Baltic region in November 2018, GPS was jammed and caused many instances of GPS failure ranging from metres to kilometres in loss of position. This affected not only military systems but also commercial aircraft, with several aircraft reverting to IRS navigation. Norway claim electronic proof that Russian forces disrupted GPS signals, and offered evidence that Russia has equipped its forces with both long-range disrupters and short range hand-held devices.

In October 2018 the US FAA (Federal Aviation Authority) issued a warning to US aircraft flying over the eastern Mediterranean region of the increased threat of Russian electronic warfare jamming: 'Be aware of possible loss of GNSS signal within Beirut FIR due to unforeseen reasons'.

If hand-held devices are available to ground-based troops, it should not be a surprise if such devices found their way to criminals/terrorists, or to people who throw bricks off motorway bridges or try to blind pilots with laser devices. Whereas initially the perceived threat was from a high-powered transmitter hidden in a lorry close to an airfield, a small hand-held device may be more insidious and difficult to detect.

The above threat is not the only danger to GNSS and aviation navigation. In July 2019, Galileo, the European satellite navigation system, suffered a major outage, being affected by a 'technical incident

During a solar radiation storm, highly energetic charged particles can slip past the Earth's magnetic field, resulting in amazing shows of aurora, potentially dangerous levels of radiation to on-board electronics and likely disruption of satellite signals and operations.

related to its ground infrastructure' that put it off-line for four days. Satellites were unable to provide timing or positioning data to smartphones or other devices that normally use the system. However, since Galileo is still in its 'pilot' phase, it is not currently used for critical applications, and in this eventuality devices automatically switch to the US-operated GPS.

Another threat is space weather from solar disruptions, which result in bursts of ionising radiation and magnetic fields being flung out into the solar system. When Earth's atmosphere and magnetic field are unable to shield us from powerful solar explosions, the potential effect ranges from beautiful to incredibly disruptive – and include serious outcomes for the critical systems used in aviation.

Satellite-based communication, navigation, and surveillance systems rely on transmissions of signals through the ionosphere, which extends upwards from 80km above Earth's surface and consists of charged particles. Solar events that modify the density and structure of the ionosphere can make the signals of one or more satellites impossible to track. This 'loss-of-lock' may result in reduced positioning accuracy or, in worst case, no GNSS service.

HF radio communications also utilise the ionosphere, with radio waves bouncing off it to enable long-range communication systems. When solar activity results in the ionosphere losing its ability to reflect those waves, HF communications are disrupted.

During a solar radiation storm, highly energetic charged particles can slip past Earth's magnetic field, resulting in amazing shows of aurora or potentially dangerous levels of radiation affecting aircraft occupants and on-board electronics. During an extreme space weather event, these effects can occur simultaneously, as in the last recorded occurrence, the 'Carrington Event' of 1859, when brilliant aurora was observed in tropical latitudes, while telegraph systems across Europe and North America failed as currents were induced along the lines by changes in the Earth's magnetic field.

Today this type of event would be likely to disrupt satellite signals and operations temporarily – and in extreme cases permanently – due to the satellite being exposed to elevated levels of radiation and energetic particle effects. Extreme space weather could also disrupt ground support for space activities, as well as the power networks, communications and aviation infrastructure.

The likelihood of such an event occurring in the next 50 years is estimated to be around 30 percent, with global economic impact estimated in trillions of dollars.

Recognising the technical and safety risks of space weather, the ICAO (International Civil Aviation Organization) Meteorological Panel set up an advisory system to alert the aviation industry on probable occurrence of space weather events, and expected impacts on the system. These space weather advisories will be provided from late 2019, issued as necessary, and covering effects on HF and satellite communications, on GNSS based navigation and surveillance, and on the intensity of radiation levels potentially affecting airliner crew and passengers.

Cyber hacking and cyber-attacks are already a major issue. Cyber-attacks can occur at many levels, from government sponsored attacks to a single individual with social interaction issues. These attacks are difficult to anticipate, contain and/or combat. Attacks can be on satellites, ATC or virtually any system connected to the internet.

A report to the US Congress in 2011 found that cyber hackers had been able to infiltrate and disrupt two US satellites on four occasions in 2007 and 2008. LANDSAT-7, a NASA Earth observation satellite, experienced interference in October 2007. The breach was only discovered following interference with another satellite, Terra-AM-1, in July 2008. The report for Congress concluded that, in interfering with Terra-AM-1, "the responsible party achieved all steps required to command the satellite." The hackers were assessed as likely to have been working for another state, gaining access through a Norwegian commercial ground station connected to the internet.

Orbital debris is expected to become an increasing problem. Since 1995 space-faring nations have coordinated to try to reduce the problem but the issue will remain for some years to come.

The threats are multiple and nefarious, from space weather and orbital debris to cyber hacking and GPS jamming. Anticipating and planning for degraded performance of navigation and communication systems adds to your margins of safety. Occasional degraded performance will be unavoidable, but being ready to respond to it with a preconceived plan is likely to increase your ability to keep flying, navigating and communicating adequately to ensure your safety.

While total reliance on GNSS may be inviting, it is simply not robust enough to be the aviation industry's sole means of navigation. This is one very important reason why basic navigation techniques are still in the syllabus of training for new pilots. But more than knowledge and skill of the basics is required. The aviation industry requires back-up systems. In New Zealand, the New Southern Skys (NSS) programme is actively considering the retention of SSR radar, certain VORs and DMEs, and ILSs, at least at the main trunk aerodromes. This is planned to ensure the adequate maintenance of our air transport system in the event of extended disruption to GNSS.

A reassessment and development of IRSs would also seem worth considering, to at least ensure a reasonable level of navigation and instrument approaches down to a non-precision level.

This article was inspired by 'GNSS and the Threats to Navigation' by Air Pilots Liveryman, Richard Lotinga. Reference was also drawn from 'Space Weather' in CAANZ Vector magazine, Spring 2019.

Keep it tidy

(and keep your bill down)

By Jay McIntyre

The JEM Aviation team was delighted to win the 2018 AOPA 'Maintenance Shop of the Year', however I knew it wouldn't end there! A year later I found myself cornered by Geoff van Asch in the Marlborough Aero Club bar, agreeing to write a series of articles from the point of view of an aviation mechanic.

Easy I thought: there are so many things to write about. But where to begin…

First, some background. As part-owner of a Nanchang, Tiger Moth, WACO UOC and Yak-9, AOPA fly-ins have been on my to-do list for years but, as with Tiger Moth Club fly-ins, I generally find myself busy getting everyone else's aeroplanes ready for the trip, then collapsing exhausted at home. Bad excuse, and needs to change.

But aviation goes way back. My Southland sheepfarmer father had a 7ECA Champ, BUU, sold when I was three but Dad continued flying with the Southern Districts Aero Club, which was also where I began. At 18 I joined the RNZAF as an aircraft technician (in lieu of pilot training), and spent thirteen years with the Air Combat Force working on Strikemasters, Aermacchis and Skyhawks, plus a long stint in the Engine Reconditioning Squadron at Woodbourne.

The Labour Government's decision to scrap the ACF saw me leave in disgust and take up a position with Stuart Tantrum at Omaka, at the beginning of what became The Vintage Aviator. In 2005 JEM Aviation was set up to cater for business resulting from the newly established Aviation Heritage Centre. Business has since boomed and we are now facing the problem of too much work and too few skilled employees to carry it out in a timely manner.

We now look after an incredibly diverse range of aircraft from microlights and simple old school home-builts through to vintage and high-end warbirds, and even a DC-3. Of course, there are a good mix of GA types too, not to mention the various projects on the go…

Keep it tidy

To the column, and the first maintenance issue that leaps to mind revolves around tech logs and flight manuals, and is really something of a grizzle.

I find that I waste a significant amount of time during annuals trying to figure out scrawlings on loose bits of paper, ripped and tattered tech logs or, worse, nothing recorded at all. ARAs become difficult when you have to wade through pages and pages of outdated flight logs, weight and balance calculations, lunch wrappers, motel brochures and so forth.

To make your engineer's life easier and, ultimately, to keep your bill down, I recommend that you tidy up your flight manual and get rid of the extraneous rubbish in it. Register with the manufacturer to get Flight Manual updates and notification of upcoming Service Bulletins and such. Likewise, take a few moments at the end of each flight to neatly and accurately fill in the tech log. You may prefer a tech log of your own design, but I think the CAA-produced one does the job perfectly.

Don't forget that each flight should be logged separately (fly away trips to multiple strips included) and not just grouped into one entry. Rule Pt 91.112 is perhaps a little confusing on this, as it is titled 'Daily Flight Records' but in fact it talks about 'each flight'. Although this requires a little more work on everyone's part, from a pedantic engineer's point of view, I am biased towards each individual flight being recorded.

Drone future

Drones are here to stay. There is no doubt that they will have a big impact on aviation and potentially on our daily lives. They often get bad press (used in acts of terrorism or invasions of privacy) or excessively good press ("Wow, this will revolutionise our lives; give us more, more, more…"), but they seldom seem to come under well-informed scrutiny.

Previously called unmanned aerial vehicles (UAVs) or unmanned aircraft systems (UAS), drones include any aircraft operated without a human pilot on-board. Developed for the military in World War II, they continue to be a significant component of the arms race, but those we more commonly see are small, multi-rotor aircraft weighing under 25kg used commercially.

The global drone market, including revenues from hardware, software/analytics and drone services, is expected to reach US$15 billion over the next few years, up from US$1.3 billion in 2016. Drones are arguably as significant a tech milestone as digital avionics and GPS. Growth in their use is limited only by the imaginations of developers, and is particularly strong in industrial and governmental markets. This leaves regulators scrambling to safely incorporate drones into the world's airspace.

In North America, the flight training sector has responded by developing sophisticated drone degree programmes. According to Precisionhawk UAV, demand for drone pilots is spiking as companies recognise the benefits of aerial intelligence, with savings and safety at the top of the list. The FAA predicts demand for commercial UAV pilots will quadruple by 2020, with more than 300,000 new pilots needed to meet future demand.

Meanwhile, many services are moving in-house as the commercial drone industry matures from proof-of-concept projects to large scale, production deployments of autonomous drone fleets. Those applications run from disaster relief and search-and-rescue operations to making critical medical deliveries and – only in America? – airdropping cheeseburgers and beer to hungry North Dakota golfers (if that stretches credulity, check it out on-line).

In May of this year, the first air carrier FAR Part 135 certificate for a commercial drone delivery service in USA was awarded by the FAA to Wing, a subsidiary of Google's parent company, Alphabet. A month earlier, Wing launched its first commercial drone delivery service in a suburb of Canberra after a four year test programme, and is currently running its first European trial in Helsinki. Award of the Part 135 certificate means the entire Wing organisation, not just the drone itself, has met the FAA's requirements for operating for hire, including economic authority, documentation and training. Wing is the first company to secure an air carrier certificate, previously only granted to operators flying manned aircraft, and will use an unmanned aircraft system traffic management (UTM) platform to integrate drone flights into the national airspace.

In China, a smart drone delivery service was recently launched by DHL-Sinotrans, China's international express company, and intelligent autonomous aerial vehicle maker Ehang. Medical drone delivery services are already operating in Rwanda, Ghana and Tanzania. Industries from electricity grid management to entertainment are getting in on the drone act, while AI developers are exploring avenues that would conceivably stretch our imaginations.

Before that all kicks off, it's essential that regulators worldwide address the legal and safety implications.

In USA, drones are sanctioned under FAR Part 107, which limits use to daylight hours, at no more than 400ft agl, and within line of sight. The operator is also regulated: they must be over 16 and hold an appropriate certificate, of which there are commercial and non-commercial variants. Drones can't be used secretively or over persons who are not aware of their operation, and they are further controlled by local by-laws, such as being banned over public spaces.

The CAA's Part 101 and 102 regulations apply similar limits and restrictions to drone operation in New Zealand, with additional specified obligations to give way to all crewed aircraft, stay at least 4km away from any aerodrome, and be aware of and obey the rules regarding controlled and special use airspace, air traffic clearances and use of radio frequencies. Operators are obliged to avoid doing anything hazardous, and to understand their responsibilities as PIC, to understand Visual Navigation Charts and to have abort procedures in place in the event of a systems failure. Whether all operators of non-commercial drones are aware of these requirements is another matter.

Ian Andrews, President of NZAF, notes that keeping the airways safe is a two-way street and that GA pilots must be vigilant and aware of their obligations.

"GA pilots are at fault if we do not read NOTAMs and do not respect the rights of other airspace users. It is our responsibility to read the VNC charts and act responsibly. Yes, I agree with those saying 'but we can transit a Danger area so long as we are aware of the danger'. However, you must also respect the users of that area; if you do not you are not showing good airmanship."

Issues with both drones and model aircraft have been recorded in the past year, and these just shouldn't occur, Ian notes.

"If you want AOPA to stand up for your rights to an open blue sky and to fight for less controlled airspace, it is your job to check NOTAMs and look at the charts so that you avoid danger areas and give modellers and others a fair go. CAA have some great productions in the GAP series, one of which is on airspace. Get a copy from the CAA website and read it. Take notice of the wonderful moving map that you have in your cockpit and show some common sense by avoiding danger areas."

Drones will inevitably become a larger part of the airspace picture. They currently come in many forms, both commercial and non-commercial (with the latter currently far more common), with sometimes eye-wateringly high price tags. Drone management apps designed to make the technology more widely accessible are similarly proliferating. Pilot programmes in USA seek to push the current legal boundaries by demonstrating that an appropriate traffic management system, including flight planning, communications, aircraft separation and weather services, can safely integrate drone flights within the nation's airspace system.

Monitoring, identifying and controlling 'rogue' drone use presents further problems, with particular concern around incursions near airports, such as that which saw London's Gatwick airport repeatedly shut down last Christmas. The drone industry is currently working with airport authorities in Europe and North America to try to find a way forward.

Not all professional pilots are comfortable sharing the skies with drones. In USA, ALPA says the proposed amendments to the FAA's Part 107 regulation certifying drone operators 'falls short of the necessary aeronautical experience, demonstrated flight proficiency, and flight proficiency needed to serve as a commercial UAS pilot'. Drones are also a concern for agricultural pilots, who operate in the same airspace. The reality is that drones are nearly impossible to see or avoid, and there is no doubt that some people do stupid things with them. They also add to a noise and nuisance issue, real or perceived, which can cause members of the public to complain, compounding an issue already faced by recreational pilots.

To ensure drones can be safely incorporated into our airspace, developers are working on apps, such as the Altitude Angel, which enables commercial and recreational users of small drones to access real-time air-navigation information and present data about their own flights from a smartphone. This is an ongoing growth area: watch this space.

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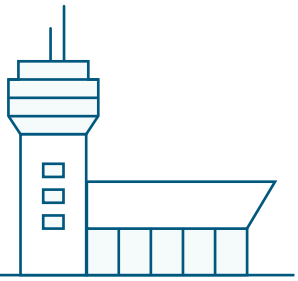

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