

The Thrill of Competition Aerobatics

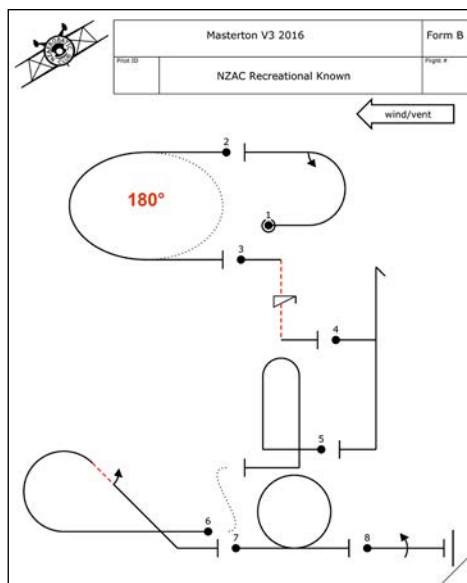
HERE comes summer, and here comes the NZ Aerobatic Club National Aerobatics Championships. For the third year, we are holding the 2017 Nationals at wonderful Hood Aerodrome, with the support of the local Masterton community and our hosts, the Wairarapa and Ruahine Aero Club. This time, to avoid the change of seasons, we have moved the event to late February (21st to 25th) which also happens to be the week after Warbirds Over Wairarapa, also held at Hood Aerodrome.

Whilst the title of the event may sound grandiose, the reality is our Nationals is just a bunch of really keen, grass-root aviators who happen to like going up-side-down, flying a bunch of really cool planes. That sounds like many of the GA events that occur around NZ most weekends of summer - micro-light / taildragger / amateur-built / gliding / beach-landings / strip-flying... Whatever happened to dawn raids?

If we had a bigger population we would probably have qualifying competitions around the country. In Oz, with both a bigger population and the various State Chapters of the Australian Aerobatic Club, they have State Championships. However, their Nationals are still a free-for-all. In fact I've just attended their 2016 Nationals at Tocumwal, north of Melbourne, as



A Sequence Card ready to follow - Likened to playing a piano from sheet music.



A 'Known' routine from the 2016 Masterton event.

a guest International Judge. There were 48 competitors from across Australia, and across all categories from Primary to Unlimited, Robins and Decathlons to an Edge 540, MXS and various Extras.

Your turn to give it a go

Do you have an aerobatic plane? Or access to an aerobatic plane, through your local aero club? If you are reasonably proficient with your aros, or even just fumbling through, you have the ability to turn-up and compete at the Aerobatic Nationals - it's not that daunting! The big difference is the discipline of performing the prescribed aerobatic sequence in front of the sharp eye of the ground-based judges, within the confines of an imaginary 1000m x 1000m aerobatic 'box'. Sorry, no wandering about the sky, looping and rolling - you have to be focused, have a plan, and maintain good situational awareness.

Nerves

For a few years I was the Sunday aerobatic pilot, looping and rolling around the entire training area, until Mrs Chief Judge suggested I should add some discipline and rigour to my flopping. My first aerobatic competition was a revelation - the knot in my stomach... the nerves!



Plenty of variety in this line-up of competitors.



Now I had a group of judges watching my every move, every twitch of incorrect pitch or roll or yaw. '10' is the aim, and you are happy with an '8', but geez... that stall turn felt like a shocker! Did the judges notice I rolled over the top? And that I was 20 degrees off-heading coming out? What I found is that judges are very poker-faced when later talking about your sequence - "Looked like you were having fun up there..."! Waiting to see the scores of your sequence is almost as nerve-racking as the flight itself - they didn't see my roll, phew!

But when I talk about nerves, I talk about 'good' nerves. Competitive nerves. These aren't nerves of fear, or nerves of the unknown. Competition nerves are the nerves of the realisation that THIS IS IT... Show-time! Time - the one and only time - to show the judges just how good you are. The best flight, of the best practice flights, of the year. The pinnacle of your flying. Maybe.

I imagine Lydia Ko feels like this every time she steps up to tee-off, possibly. She certainly looks very relaxed and for good reason - she has done this thousands of times before, and has probably developed a method of blocking out the officials / crowd / cameras. But hidden from view may still be a degree of nerves and excitement from the realisation that now is the time to perform.

And so it is with competition aerobatics, which is really just another version of display flying. When you are up in the sky, normally sitting in the plane by yourself, you are very detached from the judges and spectators - although you can be very aware that all eyes are on you!

Racecraft

Friends of mine race cars which got me thinking about a term I have heard - racecraft. I found a definition of racecraft on wiktionary, which possibly sums up a good race-car driver's skill-set:

'The total of a racer's skill (craft) along dimensions including: practicing, qualifying, starts, beginning, mid-race and end-race pace, passing, wear equipment usage, and pit strategy.'

I believe we all develop racecraft in many aspects of our life, and I think this term sums up the skills required to do well in competition aerobatics, and display flying too.

Practice

Without a doubt you must practice the individual manoeuvres, and then the overall sequence, until you can reliably and accurately fly them in manner that pleases the judges. This is an important distinction in competition aerobatics. You are not pleasing yourself with a nice 'feeling' loop, it must look 'round' from the ground. Some manoeuvres are wind-corrected and others aren't, all defined in the rules and judging criteria, and at the upper levels of competition it is amazing how some experienced competitors can turn a 20 knot wind to zero through good technique and planning.

The Sequence Card

Having the correct sequence card in front of you helps, and many competitors will re-draw them in a way that suits their style of reading (really BIG for some of our more 'experienced' competitors...). But be careful you have transposed all the manoeuvres correctly! I tend to write all sorts of notes over mine - speeds, heights, clarification of 'up' or 'down', left-rudder or right-rudder etc. Even on the day of the final competition flight, notes can get adjusted to suit the actual wind, direction of flight, geographic features etc. One of our esteemed judges likened reading the sequence card to playing a piano from sheet music - this

is particularly so when flying an 'unknown' sequence, where you are given a sequence to fly without any practice. Whilst you may know how to fly the individual manoeuvres, you won't have flown them in this order, hence the ability to interpret the sequence card and transfer the symbols from a piece of card, through your eyes, and to your hands and feet to fly a passable manoeuvre is particularly challenging - and satisfying. It certainly sorts out the men and women from the boys and girls!

Walking the sequence

The final practice for a competition flight is normally flown on the ground, if that makes sense. It happens in your head, although most often involves a bit of walking, arm-flapping, and hand-

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movements that Maverick would be proud of. Attend any aerobatic comp and you will see the odd (very odd!) person grasping and occasionally referring to a dog-eared sequence card while they ‘walk’ the sequence. Some do this with headphones and music on, zoned-out from the real world while they visualise and memorise the flow, visual cues, speeds and heights to make the sequence work.

PPPPPP

Prior preparation prevents particularly poor performance. Or something like that.

Ground prep prior to the flight should follow a regular routine, and in a similar theme to ‘a good approach leads to a good landing’ it is fair to say that having a good pre-flight routine should lead to a good competition flight - in theory!

Give yourself time to go through your normal aircraft pre-flight, and do it thoroughly - you are about to go up-side-down.

- Do you have enough fuel. Have you checked the oil?
- Is everything you need in the cockpit, and everything you don’t need out?
- Sunglasses - check.
- No sunblock on the forehead - it stings and distracts when it mixes with sweat and trickles in to your eyes, mid-loop.
- Hydrated, but not too much - for some reason you will still feel the need for a nervous one even though you haven’t drunk a thing for three hours!
- Have in your stomach what works for you. For most people this is ‘something’ (a sandwich or banana) but not a bag of chips and a gallon of Coke.

Know when you should be flying, who is flying in front of you (and the person in front of that), and be ready. Have your plane positioned ready for start - be strapped in with your headset handy when the ‘starter’ stops by to confirm from the starter’s checklist you are, indeed, ready to go. We are very particular about this process at our events, as sometimes the pilot is too close to the action to see the glaring obvious - we have had pilots say they are ready to go flying, without having their seatbelts done up or fuel cap on...

Do your normal run-up and pre-flight checks. If you have followed the instructions of the Starter, you will have plenty of time. It’s not worth rushing.

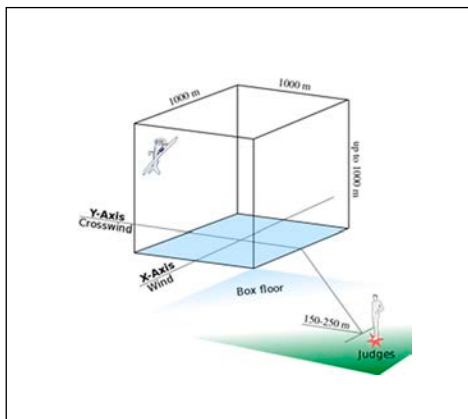
Airborne... Holding

When you get airborne, proceed to the designated holding area and make sure you are on the right radio frequency for the event. The radio is our other set of eyes, and building a mental picture of where other competitors are holding, competing or re-joining is vitally important.

Use this brief period of holding to do your HASSELL checks - the last tug on the belts, the last look around the cockpit to check everything is secure. Whilst you are allowed to do a couple of safety manoeuvres prior to your competition flight, nothing is more off-putting than seeing the tech-log float past your eyes mid-loop!



Ground markers identify the box location.



The Box specification: 1000x1000x1000m



Where was it again?

“Commence when ready”

Show-time! This is it - all that practice, all that preparation, distilled into the next three minutes of your life. Glory? Failure? Humiliation? Glory it is.

Say this to yourself - “Just another day in the office”. And that is how you should fly your sequence, just as you have been practicing. Not faster or slower, higher or lower. Not pulling more ‘g’ than you have ever pulled. Fly it just as you did for your best practice ever - can you remember that one?

The start of your sequence is perhaps the most important part of your sequence, so you need to get this right. From my experience judging, I see many competitors blow the start by diving in too steep and descending too low, then struggling for height and speed for the rest of the sequence. From my experience competing, you feel like you need to ‘wow’ the judges with your flashy entrance - Captain Fancy Pants is here! (trumpet fanfare) - without realising what ‘potential energy’ you are giving away until five or six manoeuvres latter. “Where did all that speed and height go?”. Answer - drag and gravity. So, bottom line, get your start right or hit the gas, climb up and have another go.

Throughout the sequence be mindful of where you are, relative to the judges, the box, and where in the sequence you are up to. Easier said than done - particularly during an ‘unknown’, but getting into a rhythm that works for you is important. It might be that you have memorised the entire sequence and spend the whole flight ‘heads-up’. If the sequence is more complex or still too new, you may have to move your eyes about, between the sequence card, outside, the airspeed indicator, altimeter, outside, sequence card... you get the picture. In the end use whatever works for you, but the sooner you develop a system that works reliably the better. It’s muscle memory - the muscle being your brain.

Getting lost

Despite all your best efforts, you may/will get lost - in the sequence or geographically. It is not the end of the world or even the end of your chances of glory. In competition aerobatics there is a saying ‘He who finishes with no zeros, wins’, which can be true, but conversely in some programmes we see everybody have a ‘zero’ score for a manoeuvre or two, which levels the playing field again. NEVER GIVE UP!. The secret is to recover ‘well’, which means



taking a break, climbing for height and giving yourself time to figure what went wrong but more particularly where to start off again, in the right direction and at the right speed and height. There is no rush, and many times I have seen people take a break only to be starting in the wrong direction, or with insufficient speed and/or height. You do get a penalty for taking a break, but if you subsequently 'zero' every following manoeuvre for flying them in the wrong direction, you will really be kicking yourself. And the poker-face judges will probably just say to you, over the lunch break, "That looked like fun"!

Getting back on the ground

Despite all the focus on flying the sequence, the ultimate real money-shot is still to come - the landing. This might sound a bit odd, and we don't have any trophies for this at our events, but the landing is the final manoeuvre in the competition aerobatic flight that must be done right, for obvious reasons. After a hot and energetic few minutes of aerobatics, subconsciously you have been working quite hard and may notice your shirt wet with sweat and your heart pounding. Most likely you have been to +5G and -1G or more (much more on the higher categories) so now you have to cool your head and hands for the landing. Take your time to get this right. Make a large, slow circuit if you need to, to compose yourself and focus on the new task at hand. Go through your normal routines and checks, flying your

normal approach and BREATHE. You can't change the sequence you just flew - that is now 'in the can' - but you have a responsibility to get the landing right!

Where to start

So you like aerobatics, and I've pricked your interest in the competitive side of the sport - how do you take the next step? Easy: sign-up, read-up, practice and turn-up, in that order. There is information on the NZ Aerobatic Club website (www.aerobatics.co.nz) to get you started, including the Known sequences for all categories. This coming year we also have available a Robin and S2A Pitts to rent, with a safety pilot/instructor sitting with you - once again refer to our website.

My advice for absolute newbies would be to try the Recreational category. This is an NZ-only category capable of being flown by any current training aircraft plus Tigers, Stearman, Chipmunks and the aerobatic RV-series (don't try it in a -10!).

A few days immersed in the buzz of the comp will massively improve your racecraft. You'll also become hooked! Don't say you weren't warned.

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

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