RAANZ
Recreational Pilot e-zine
Issue 97
August 2015

CAA 2015 Flight Instructor Seminars

Flight Instructor Seminar 2015 - How to Teach Met

If your efforts to teach meteorology are met with glassy-eyed stares, look no further than the 2015 Flight Instructor Seminar.

The two-day flight instructor seminars are targeted at new C-Category (Aeroplane/Helicopter), and microlight, flight instructors. However, you're welcome to register regardless of your experience.

This year's seminars will be presented by Greg Reeve, aviation meteorology instructor. Attendees will learn the principles of teaching met, how to simplify it, and how to make it interesting.

Seminar Schedule

City	Venue	Dates
Masterton	Solway Hotel	04 to 05 Aug 2015
Ashburton	Hotel Ashburton	11 to 12 Aug 2015
Auckland	Spencer on Byron Hotel	18 to 19 Aug 2015

Thanks to sponsorship from Aviation Services Limited, the CAA has been able to keep the cost of the seminar to $160. That includes all meals and twin share accommodation.

Flight training organisations are encouraged to contribute by sponsoring the attendance of their flight instructors.

Registration Form

Post your registration form to: CAA, PO Box 3555, Wellington 6140, or email it to: finance@caa.govt.nz

RAANZ Instructors- These seminars are a good opportunity to brush up on your instructing tools and techniques. And for junior Flight Instructors, attendance meets the Instructional Techniques requirements for advancement to Senior Flight Instructor. And an opportunity to meet other Part 149 and Part 61 instructors, share your experiences ands learn from each other.

Registration forms and info

RAANZ will assist **<u>current</u> junior Flight Instructors** to attend the seminars by subsidising the attendance fee. On completion of the seminar, simply send RAANZ proof of attendance (eg a copy of your registration receipt) and we will refund $60 to you. This means the net cost to you to attend will be $100 registration, plus your travel and time.

RAANZ ATO Seminar

RAANZ ATO seminar 2015

RAANZ (Inc), PO Box 15-016, Hamilton 3243

ADVANCE NOTICE

RAANZ is planning a seminar for all ATOs to be held at-

CAA meeting rooms

Asteron House, Wellington

Saturday Sept 26 - Sunday Sept 27

Meals and overnight accommodation will be provided.

We hope to negotiate a group deal for cheaper airfares for those flying in.

Full details of timing, agenda, travel and accommodation will be advised as plans firm up.

This is a major initiative (and expense) by RAANZ- we expect all ATOs to attend if at all possible- you all have a contribution to make by sharing your knowledge and experience.

Please reserve these dates in your diary NOW!

To help plan accommodation, please advise RAANZ of your intent to attend.

www.raanz.org.nz

Supported by-

ATOs- If you have not done so already, **please indicate your intention to attend this week**- I need to confirm accommodation bookings. Unfortunately a group deal for airfares is not available.

European experiences

Jeremy Talbot/South Canterbury Microlight Club

Recently I was in Europe and the UK on business and was also looking at planes and have bought a RANS S6 and will bring it back soon along maybe with another from France as a club plane. It has a near new Verner 1340cc 2 cyl BMW type engine fitted which is a very lazy engine giving good economy at only 85hp.

But it was really interesting in the different systems of regulations. **From what I have seen we have got it about right.**

The **French** have no checks on an annual basis and certainly no fibre covering checks. Trying to explain this to a non English speaking French man through an interpreter was difficult as to why I would not buy until the tests had been done was almost impossible. I then googled it and found the excellent RAANZ article showing what was required and why. The Frenchman was quite amazed as he has planes that are used in a flying school that are 20yrs old and have never ever had a fabric test and further more do not have the equipment to do so. The same goes for the vacuum bearing tests we do here on the Rotax , nothing like that exists in France either. It would seem the French CAA have decided that if you are prepared to fly it then you make sure that it's safe. This I found was in contrast to the way the EU rules the rest of their lives with rules required to do almost anything.

The **UK** on the other hand for some reason requires regular weight and balances along with everything else we do but must also log each engine start. They are starting to relax a bit and with new rules for low powered single seaters will operate a bit like France. The BMAA tell me that the lack of regulations in France and a lot of Europe is the reason why you can only fly a visiting plane for 28 days in the UK before a full certification is done.

We were flying with the wind sock horizontal, but as it's such a constant wind, it was only really noticeable at take off and Landing. France was brilliant with big areas of unrestricted areas unlike UK which seemed to have a control zone every 2 or 3 miles.

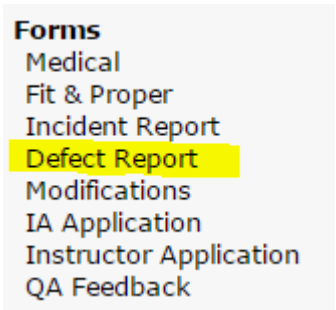
Incident and Defect reporting

We have had a bit of a tidy-up of incident and defect reporting procedures to make the system easier to use and the information more accessible to pilots.

The idea is that if you guys tell us about gotchas, near misses, bends, breaks, close shaves, impromptu in-flight lessons learnt, type specific issues or defects, we can publish them on the website and RecPilot for the benefit of other pilots- and also monitor to see if there are any trends we need to act on.

But the system will only work if it is used. That is your job!

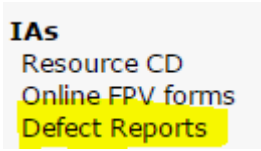
Found a defect?



- Click on the Defect Report link on the RAANZ website
- You can print out, fill in by hand and post to RAANZ, or fill in online and submit to RAANZ. Include as much info as you think useful. A photo is worth a thousand words.
- We will de-identify the report, review it, publish the report in

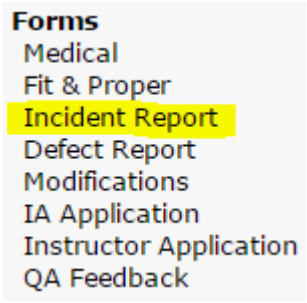
RecPilot and also post on the website grouped by aircraft type.

- Pilots and IAs can review defect reports appropriate to their aircraft, and perhaps learn from and avoid repeating the defect.



Had or witnessed an incident?

- Click on the Incident Report link on the RAANZ website
- You can print out, fill in by hand and post to RAANZ, or fill in online and submit to RAANZ. Include as much info as you think useful. A diagram is worth a thousand words.
- We will de-identify the report, review it, determine any corrective action needed, and if appropriate publish the report in RecPilot and also post on the website.



Had an accident?

- Any accident involving significant injury (ie ambulance/hospital/incapacitation), or significant damage (ie no longer airworthy/rebuild required) must be reported to CAA on CAA005.
- CAR Part 12 provides useful information on how to manage the site and wreckage after an accident.
- Regarding damage to an aircraft, the distinction between an incident and an accident can be blurred and open to some interpretation. RAANZ view is that minor scrapes, bent gear legs and downtubes, etc that only require replacing a part are incidents, whereas anything requiring a significant rebuild affecting airworthiness (and therefore re-inspection before release to service) is an accident. If in doubt- ask.

Mandatory Permit Directive- P & M Aviation Q2, Quik, GT450, QuikR and Quik GTR microlights

UK Emergency Mandatory Permit Directive (MPD) 2011-005R1 - effective 20 Jul 2015.

UK (MPD) 2011-005R1 is issued with effective date 20 July 2015.

This MPD is applicable to P&M Aviation Q2, Quik, GT450, QuikR and Quik GTR microlights with X-05 or Technora reinforcement bands.

P & M Aviation SB 132 issue 4 dated 18 June 2013 pertains to the subject of this MPD.

For aircraft with more than 500 hours TTIS and aircraft which are more than 2 years old, accomplish the requirements in MPD 2011-005R1 within the next 25 hours TIS from 20 July 2015, unless previously accomplished at the last annual inspection. Thereafter at every annual inspection accomplish the test described in P & M Aviaion SB 132. High G manoeuvres must be avoided until MPD 2011-005R1 is accomplished.

P & M Aviation SB 132 issue 4 dated 18 June 2013 can be obtained from the P & M aviation web site.
For the background information which prompted the issue of the UK MPD refer to the SB.

Just like an old slipper!

Grant Coldicott/Geraldine Flying Group

It seems that the old Cessnas and Pipers are being pensioned off just about as fast as the old PPLs of the same vintage. Increased operating costs and stricter compliance schedules seem to be making it harder and harder to keep hourly rates at a level that most recreational pilots can afford. Medicals are now a significant cost as well, even if you have the body of a 20 year old, let alone going down the 'further investigation required' track.

By my calculation, it's the best part of $1000 to do a PPL BFR and Class II medical, all going well. An RPL is somewhat cheaper by virtue of the medical being so, but it's not available to everyone.

Yesterday a bloke called me to see if he could get a go in a Tecnam we have in the hangar. He'd almost 900 hours up in everything from Cubs to 185's but had not flown since his medical lapsed in 2006.

After the usual preamble, we got aloft and there was absolute silence in the cabin as he soaked up the experience once again. He couldn't put it down. It was like an old slipper, a perfect fit and he was totally comfortable! He had all the skills and was a part of the machine rather than just being in it. I was there for the ride really.

Afterwards I was reflecting on the very good standard of PPL training over the years, particularly in the old days where the instructors were hard case, true blooded, aero club stalwarts who would wrap you over the knuckles until you got it right. They had high expectations but, in my experience anyway, a practical ability to teach their students to fly to survive. Often they were CFI's for years and jealously guarded their patch.

As the aero clubs face difficult times ahead and a greater number of new pilots choose to fly microlights, the onus is on us to ensure that high standards of flight training are maintained and the ability to fly to survive is well taught.

We occupy a special place in NZ aviation, one that has been hard fought for and particularly well managed by the Part 149 organisations.

Needless to say, the guy went off with a medical form in hand !!

SuperSTOL CVV on approach in the Matukituki Valley, near Mt Aspiring. 2015

Old Bill's Safety First article

Tim Maynard. Reprinted with permission of Collette Maynard.

Old Bill's "Safety First" Article

Safety tips based on the fact that there really are No New Accidents

Published courtesy Tim Maynard of the North Shore Aero Club Inc.

Do you feel the need for Speed .....?

Well, well – the fires a'cracklin away in the grate, the cats are asleep, and we are have settled down to winter. Lovely anticyclone sitting over the country, with low night-time temperatures and we're waking up to frosted cars and a frozen bird bath ! Perfect flying conditions – if perhaps a little cold with the "Old Hood down" !

"So Bill, what's up this month" I can hear you all asking ? Well Folks, it's like this.....

They always come along in threes – like London Buses...

I've said it before, but I'll say it again: Just when you think there's not a damn thing to write about, a couple of things come together and suddenly there's an article staring you right in the face. And this month we are going to have a look at AIRSPEED, and things you really should know about.

So what has spurred me into action ? Well, I make no apologies to those involved, but I will spare them the ignominy of being named. It is really "Bloody Important" though, that the rest of us learn from these incidents, where one aircraft was flying too slowly – and the other flying too fast !

The first incident was an aircraft undershooting and clipping the fence during a Precision Landing

The second incident was an aircraft entering a loop at 140kts, 10kts above the recommended entry speed (which is 13kts above the Maximum Manoeuvring Speed, Va), and also pulling about 5.3g during the entry phase (Max Limit Load 6g).

So here goes then.....and please: "Ladies and Gentleman, Make sure your Seat Belts are Fastened ....."

Airspeed – What it is

Here's an Airspeed Indicator – Figure 1. It's been randomly selected – and it's for a Twin. I know that because it's got a Red Line (75kts) – Vmca – minimum (single engine) control speed, and Blue Line (92kts) – Vy – Best Rate of Climb speed (single engine). Other than those two minor differences, it's what you will see if you poke your nose into a Robin, Cessna or Piper parked on the apron.

Figure 1 – An Airspeed Indicator

So first question Folks: what does it measure ?

Well, it doesn't measure speed at all – it doesn't measure True Airspeed or even Ground Speed - it actually measures pressure – the Dynamic Pressure – or "Q", which is a measure of how much "Dynamic Energy" the air has when the aircraft strikes it – or vice versa. If there is low energy (low "Q") – then it will show a Low Indicated Airspeed (IAS), and you may not be able to generate enough lift to overcome the weight. Conversely, too much "Q" (High IAS), combined with too much angle of attack (AoA), and you might generate so much lift that you end up pulling the wings off ! For example if you decide to pull more than the limiting amount of Load Factor when pulling out of a high speed dive ! – See Figure 4.

It's got coloured arcs (White, Green and Yellow) – which I will discuss in a while, and minimum and maximum recom-

mended airspeeds: Stall Speeds at the low end and Never Exceed Airspeed at the top.

So what else should be placarded in the cockpit, or published in the Aircraft Flight Manual (AFM) and which we need to be aware of ? Well, in a typical Normal/Utility Category Aircraft (eg Cessna 172), you should get the following information presented to you in ascending order:

Vx – Best Climb Gradient Speed

Vy – Best Rate of Climb Speed

Best Glide Speed

Va – Manoeuvring Speed – you usually have to look for that one as it's normally stuck somewhere odd !

And in an Aerobatic Aircraft ?

Well, entry speeds for each of the manoeuvres for which the aircraft is certified will be placarded somewhere. These will have been established following a rigorous flight test programme, flown by a Test Pilot, and just like the Maximum Take-off Weight, or the Centre of Gravity Limits, they must be complied with. Why ? - because if you don't, the aircraft is essentially operating outside of its Certified Limits, or to put it bluntly, you might break it ! – See Fig 4.

Going too Slow.....

Ok - so what happens if you fly too Slowly – like on an approach for example ?

Well, we all reckon we know the answer to that – but somehow pilots still get in a muddle. If you trundle down the approach at a speed that is below the Best Glide Speed (ie Minimum Drag Speed), so that you are on what we call the "Back-side of the Drag Curve" (ie to the left hand side), then you are asking for trouble unless you manage the Power and Attitude properly. – See Figure 2.

You see the thing is that you will be operating in an area where the relationship between Pitch Attitude and Drag is unstable. If you decide to raise the nose during a moment of confusion to check the rate of descent without adding power, then the speed will reduce and the drag will increase, thereby increasing your rate of descent – which requires more power to arrest additional rate of descent.

Do it again and it will get worse, until the moment comes when there is insufficient engine power to overcome the large increase in drag, and the aircraft will simply "Mush" (as the Americans say) into the Ground, usually taking out the landing gear and the fence all at the same time.....! However, if you are on the "stable" side of the Drag Curve – ie to the right of Minimum Drag Speed, if you raise the nose, the Drag will reduce and your Rate of Descent will reduce - so you are speed stable.

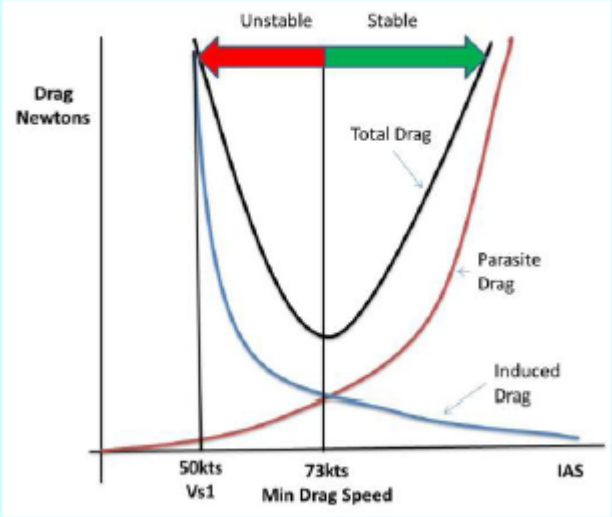


Figure 2 – Total Drag versus Airspeed – PA28-161 ZK-KAT

So, on any type of approach the speed should be as published in the AFM. Usually there is a Reference Speed at the fence (Vref), and this is based on a factored stalling speed (Vso) with the gear and the flaps in the landing configuration. Most Design Regulations call for a maximum speed of 1.3 Vso at the fence, so for larger aircraft it will vary with weight when there is a change in the disposable load. The speeds on the approach are therefore planned so that it progressively reduces on final, say from Vref +10kts as you turn Final, to Vref at the fence. And the thing to remember is that the approach must be stabilised (ie speed and height under control at all times). Also, don't forget – speed is controlled by small changes to pitch attitude (and you must keep the aircraft trimmed) – and power will control your rate of descent and you must use power wisely.

OK – so that's the approach. Now the various coloured arcs on the ASI – Back to Figure 1.

Coloured Arcs – Bottom of the White and Bottom of the Green

Bottom of the White Arc is Stall Speed (Vs0) – Flap and Gear Down, Power Off, Max All-Up Weight, 1g Flight

Bottom of the Green Arc is Stall Speed (Vs1) – Flap and Gear Up – Power Off at Max All-Up Weight, 1g Flight

Best Glide Speed

Now, a little way up from the bottom of the White and Green Arc is a speed that all trainee pilots will be familiar with, but maybe not pilots who are little long in the tooth, or are out of practice on the Forced Landing and Glide Approach Front.

The important speed is the Best Glide Speed – and this can be found in the Emergency Section of the Flight Manual – Section 3. It's the Minimum Drag Speed and is shown in Figure 2.

This speed is really important. Why ? -because if the "Old Donkey" at front end stops (unlikely, but it does happen), then in order to go the greatest distance in still air before you arrive on the ground, then it is imperative that you fly the aircraft at this speed. So in an emergency situation you need to lower the nose and attain this speed, trim the aircraft and then fly the aircraft right down onto the ground.

Coloured Arcs – Top of the White (Vfe) and Top of the Green (Vno)

Ok, so continuing to work round clock-wise. The top of the two arcs are bounded by Vfe – on the White Arc, and Vno on the Top of the green.

Vfe

This is the Maximum Flap Extension speed – Vfe. Essentially if you are flying along at speeds above Vfe and decide to select flap, then potentially (and most probably) you will end up doing some significant damage to the aircraft structure. The flap is not designed to be operated at high speed and will possibly detach itself, buckle or put a significant airload into the wing structure that could end up deforming the wing or even twisting it off !

In addition, excess airloads will also be applied to the flap operating mechanism, the flap tracks and all the other bits and pieces – which is obviously not a good thing !

Vno

Now Vno - Top of the Green Range - is the other speed one that catches people out. Vno is the Maximum Normal Operating Speed. It is the maximum speed that you can fly the aircraft safely in normal flight conditions – ie when there is normal atmospheric turbulence. Now above that speed, you will find the Yellow Arc and this is the Caution Area that should only be entered when the air is absolutely smooth – ie no turbulence at all. In fact, my advice is that you should stay out of the yellow arc when flying in New Zealand. Believe me: having flown in the UK, USA, France and Australia, NZ air is bumpy stuff – it's all down to those unstable air-masses coming up from the Southern Ocean and the rugged terrain ! Anyway, where people get caught out is when starting a descent at a relatively high cruise speed – or when doing aerobatics in turbulent conditions. Just lowering the nose, without reducing power first, will increase the speed and in some cases will push the aircraft into the Yellow Arc quite quickly.

On one occasion flying to Tauranga in the PA28 DXI – the increasing speed in the descent over the Kaimai Ranges was such that we were 20kts above Vno in no time. I told the pilot to slow down, but they were completely unaware of why that was necessary. Remember, flying in the vicinity of terrain, in even the most moderate weather is likely to result in the aircraft encountering some turbulence. And if you are above Vno – the Maximum Rough Air Speed - then the aircraft may be subjected to additional airloads (that's the combination of the air's Dynamic Energy (Q) and increased angle of attack) that will be sufficient to exceed the "G" limitations of the aircraft – See Figure 3.

Vno is based on the aircraft that is flying straight and level (ie 1g Flight) encountering a vertical gust of about 30kts (50 feet per second) – See Figure 3. This will cause the aircraft to be accelerated vertically upwards, or downward, at a rate that will generate an overall acceleration force that could cause the aircraft to break-up .

The lower your wing loading (eg in a microlight), the lower your stall speed and the lower your G limitation (eg Utility rather than Aerobatic), then the lower will be the published Vno.

There is some really chilling footage in a CAA/AIB Accident Report of a microlight breaking up over Abel Tasman National Park in severe turbulence. You can see the white caps and wind-lanes on the surface of the water and the aircraft is obviously being exposed to significant vertical and horizontal wind shear immediately before structural failure occurs.

Vne

At the top of the Yellow Arc is the aircraft's Never Exceed Speed – Vne. Now this is usually a design speed that is

located at least 20% above Vno. It's put there so that when you are cruising along at Vno and decide to lower the nose without reducing power, then there will be small safety margin before things become a little exciting !

Vne – it's there as a safeguard and you don't want to tempt fate by operating the aircraft above that speed !

However, I've been to Vne a couple of times in various aircraft. In the UK when you flight test aircraft after an Annual Inspection, you have to take them to Vne in a dive. Hopefully during the test the aircraft won't suffer from flutter and break into a million pieces, but to avoid such things occurring unexpectedly you work up to Vne gradually – say in 5kt increments - from Vno.

The other time was in an aerobatic aircraft when practising Barrel Rolls with a student. As part of the exercise I allowed the student to enter the Barrel Roll from almost level attitude, without first pitching the nose up to at least 60deg, which is the usual practice.

We started rolling with the nose only just above the horizon – say 10 deg – and rolled through the inverted. By the time the wings were level again we were going downhill with the nose about 70 deg below the horizon and the airspeed increasing. Vne in that aircraft was 182kts and as we approached that speed I told the student to commence the recovery (ie close the throttle, roll wings level and ease out of the dive). For some reason they decided to push the nose further towards the vertical and just as we hit Vne, the Canopy Latch partially failed and the canopy lifted off it's rails. I really thought the canopy was about to detach, which would have taken the tail off too. Luckily it didn't - so lesson learnt there I think !

The thing is that Vne is there to stop you hurting yourself. Imagine what 182kts translates to in a car – that's an eye watering "Greg Murphy Style 360kmph" - and that is a whole stack of "Dynamic Energy" or "Q" moving over some pretty fragile components ! The reason the canopy lifted was simply due to the large amount of additional suction – ie lift - that the excessive airspeed (Vne) was generating, causing a slightly loose latch attachment mechanism to slip.

And Finally – The Manoeuvring Speed – Va

I reckon that there's some confusion when it comes to the Manoeuvring Speed – Va - and what it relates to. I think this may result from the fact that in the Robin R2120 and R2160 the speeds for Va and Vno are the same, at between 127 - 129kts, depending on which conversion factors have been used in the AFM and where on the placards you look. This is purely coincidental, because Va is always less than Vno and is defined completely independently – see Fig 3. Anyway – the lower figure of 127kts should be used for safety reasons.

As I said earlier – Vno is the maximum speed that you can fly the aircraft at in rough air and at which, if you encounter a 50fps vertical gust – it's just like hitting a Speed Bump in a car – you shouldn't damage the aircraft.

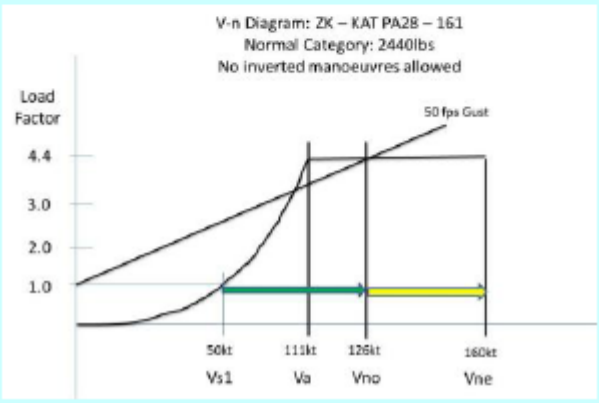


Figure 3 –Velocity versus Normal Acceleration Diagram (V-n) with 50 ft/sec overlay

Now Va is different. Va is the maximum speed at which it is permissible to manoeuvre the aircraft **in pitch only** to the Critical Angle of Attack (AoA crit), and at which the combination of airspeed and AoA crit will not exceed the Maximum Load Factor. Essentially, Va is the Maximum Speed at which it is safe to stall the aircraft – and we usually refer to "Full and Abrupt Control Input" during briefings. At any speed higher than Va, then the Limit Load Factor will be exceeded before the aircraft stalls. And that is not a Good Thing....

You see, an aircraft wing will just carry on generating a lifting force until it reaches AoA crit – at any old airspeed, and only once it has achieved AoA crit will it stall and "unload" the wing structure. But for the poor old aircraft structure and you for that matter, it may be just a bit too late !

As I said, the lift force generated by the wing is governed by the combined effects of AoA and Airspeed and if you just keep shoving the airspeed up and applying AoA "Willy Nilly", then at some point you will generate so much lift

force that you will ending up just simply pulling the "Friggin" wings off !

However, when Reggie and dear old Roy start designing an aircraft in the design office for you (resplendent in cardigans, with their pipes and slide-rules to hand) they are careful to give you design safety factors that are intended to keep the "Wise" Pilots informed and "Not-so-Wise" Pilots alive.

The design limits they use are:

Limit Load Factor – the aircraft can be "safely" manoeuvred in pitch to this amount of "G", without coming apart or deforming

Ultimate Load Factor – (1.5x Limit Load Factor) - which is the maximum Load Factor that can be achieved before the aircraft is overstressed and will in all likelihood break-up – See Figure 3. But, so long as you don't exceed Ultimate Load Factor, in theory it should stay in one piece, although it will suffer from deformation, such as rippled wing panels, bent engine bearers, deformed horizontal stabilisers etc !

Now here's my advice Folks – so Listen-up good !

Now I've used the term "safely" when discussing "Limit Loads" because they are the loads that you can be applied in theory to a "Fresh Out of the Factory Aircraft", which has no manufacturing deformities, no age induced weaknesses (such as corrosion or fatigue cracks) and hasn't been previously overloaded by some "Ham-Fisted" pilot during an earlier aerobatic session.

But we don't have access to "Factory Fresh Aircraft" most of our aerobatic aircraft have been used, are of varying ages, and even with the best will in the world may have some age induced weaknesses that even the best trained engineering eye, or pilot on a pre-flight, won't possibly spot – like my slightly loose Canopy Latch !

So even if you know the aircraft intimately, and have flown it many times before, don't abuse it or overload it unnecessarily. Also remember that the Limit and Ultimate Load factors apply in pitch only. If you pitch and roll at the same time, then the allowable Limit and Ultimate Load Factors reduce by about 30% (according to Naval Aviators if you want to look it up). Now, without wishing to be a Smart-Alec, I have flown a lot of aerobatics – as an instructor and private pilot – and I have never "pulled" more than about 3.5g, or exceeded Vne. Why ? because there has never been any reason to. The allowable aerobatic manoeuvres in the Robin2160, Slingsby, Cessna 152A, Nanchang, Stearman etc. can easily be flown well within the aircraft's Design Envelope (ie V-n Diagram) without getting anywhere near the 6.0G or Vne limits.

Sure, if you want to engage in Competition or Demonstration/Display Aerobatics, then you will probably take the aircraft to somewhere near its Limits. But not when flying aerobatics with your next door neighbour, on a sunny Sunday afternoon in one of the Club's aircraft.....You know what I mean.....?

Always fly the aircraft smoothly and keep an eye on the G Meter and ASI at all critical times during any manoeuvre. By critical times I mean entry and recovery. The Altimeter is also vitally important. Just as the ASI gives an indication of Dynamic Energy (Q), the Altimeter is your Potential Energy Meter. So don't go entering a manoeuvre without an adequate supply of both Dynamic and Potential Energy.

But with Dynamic Energy (Q), it is possible to have too much.....just have a look at the following photo (Figure 4). It's a Vulcan Bomber breaking up at an airshow, while carrying out a high speed run that involved a Pitch and Rolling Manoeuvre at a speed that exceeded the design limits of the aircraft.....all on board were killed.

End Piece.....

If you want to see what in-flight failure looks like after an aircraft has exceeded its allowable load factor, or Vno, or has exceeded the limit that it can withstand due to "age" induced weaknesses, such possible fatigue or glue failure, here are some examples that you might like to read about.....or in some cases you can watch the "video recording" which some hapless passenger was making at the time of the in-flight failure.....

- dH82 Tiger Moth – Wing Failure – Australia December 2013
- Jodel D120 – Failure of wing structure during unauthorised aerobatics
- C130 Water Bomber – Wing Failure during recovery from water bombing run
- Microlight – Abel Tasman National Park – in-flight failure due to extreme turbulence and rotor

- Vulcan Bomber – Disintegration at Syerston Airfield – 1958 – during high speed, low-level run exceeding Vno

Fellow Members and Flyers – my message is this:

Aerobatics and flying is supposed to be FUN. But taking the aircraft to the limits of the performance and structural envelope is the domain of experienced Test Pilots. And remember: they wear parachutes and are trained to deal with failures and in-flight emergencies.

And all that flight testing and certification takes place many years before you come anywhere close to flying the aircraft type. So it's not your business to push the envelope to the limit, and anyone who flies must understand and operate within the limiting airspeeds and Load Factors associated with the aircraft they fly. It's in your own and your passenger's best interests, I can assure you.

So that's it for this month. Fly safely and keep the feedback flooding in. "Old Bill" is always watching, listening and looking out for you. And remember this: always fly like there is someone watching you .....!

"Old Bill"

e-mail address – theoldbill@outlook.co.nz

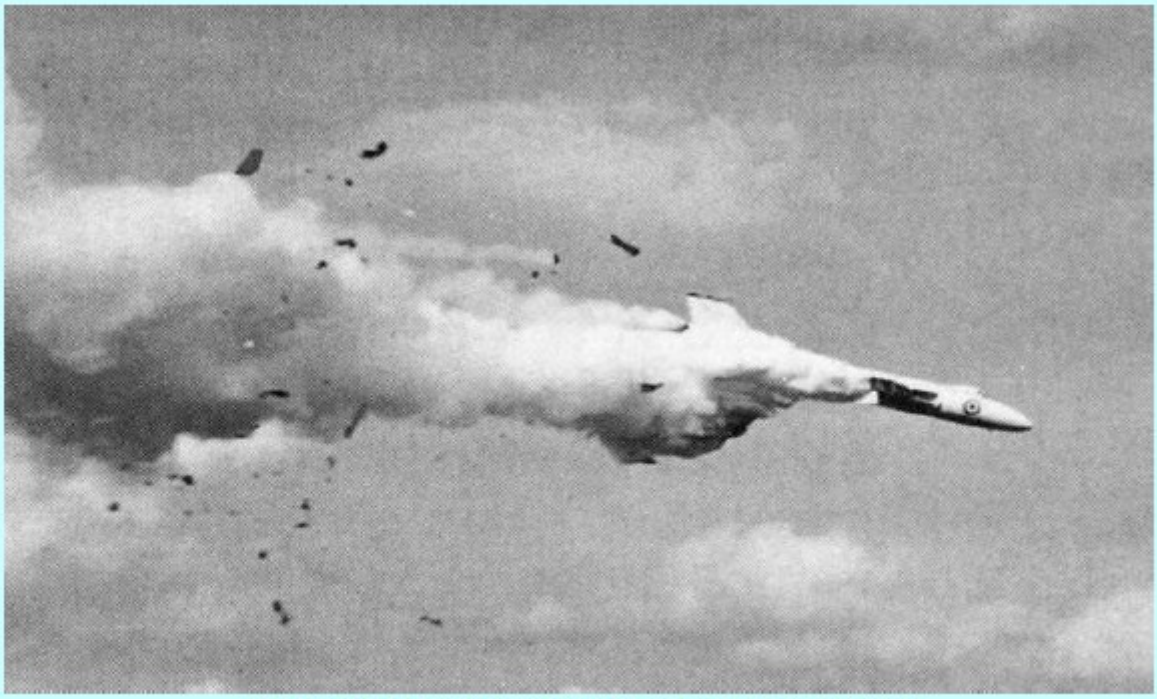


Figure 4 – Vulcan VX770 disintegrating at Syerston Airshow in 1958

Membership changes

Robin Langslow	Central Hawkes Bay Aero Club	Novice	Joined
William Gard	Canterbury Recreational Aircraft Club	Novice	Joined
Anton Meier	Bay of Plenty Microlight Assn	Flight Instructor	Joined
Michael Caulfield	Manawatu Microlight Club	Novice	Joined
Richard Barley	Gyrate Flying Club	Novice	Joined
Hamish Janson	Gyrate Flying Club	Novice	Joined
Rhuaridh Williamson	Hawkes Bay and East Coast Aero Club	Novice	Joined
Michelle Francis	Canterbury Recreational Aircraft Club	Novice	Joined
Geoff MacGregor	Associate- no club affiliation	Novice	Joined
Adam Butcher	Fiordland Aero Club	Senior Flight Instructor	Upgrade
Glenn Jones	Hawkes Bay and East Coast Aero Club	Novice	exam
Neil Campbell	Geraldine Flying Group	Novice	Exam
Shanon Eyre	Matamata Aero Club	Novice	exam
Gary Hawkins	North Otago Aero Club	Novice	exam
Kenneth Mitchell	Canterbury Recreational Aircraft Club	Advanced National	Upgrade
Richard Seymour-Wright	Bay of Plenty Microlight Assn	Senior Flight Instructor	Upgrade
Terry Smith	Hawkes Bay and East Coast Aero Club	Advanced National	Upgrade
Alex McNab	Associate- no club affiliation	Advanced Local	Joined

PO Box 15-016
Dinsdale 3243
Hamilton

07 825 2800
office@raanz.org.nz
w: www.raanz.org.nz