contributed by Craig Anderson

Airstrip Flying 101

Mastering the Stabilised Approach

Craig Anderson's Piper Pacer at Middlehurst Station, Upper Awatere Valley, Marlborough.

When Craig Anderson was helping us put the preceding Bush Pilot Champs content together, he mentioned that he wrote some notes on 'Mastering the Stabilised Approach' a few years back and might it be of interest to readers?
We didn't have to read very far into Craig's essay to be certain that it would be. I'm reminded of something a wise instructor told me when I was training: "Make every landing the best one you've ever done." As Craig points out, that best-ever landing will largely be determined by the approach you have made.

If I had a dollar for every budding bush-pilot who has come up to me over the years wanting training on how to do airstrip landings, I still wouldn't be rich, but I certainly would have a few more dollars in my pocket than I have now. What I always tell them, is that in most aspects, an airstrip or off airport landing should be no different than any other landing you make at a 'normal' airport.

Many budding 'airstrip' students seem to think that they should land using one method at their home airport, and then expect to be taught something different, revolutionary, and exciting when they sign up for an airstrip flying course. There is often a flicker of disappointment in their eyes when they are told that there is no magic involved, and no new amazingly skilful techniques to master – if they fly well and have been trained properly, any competent PPL or CPL should have no problems flying in and out of a farmers airstrip or paddock (assuming the length and surface conditions etc. are ok).

> "To summarise, you can see that the first step to becoming a bush-pilot legend is to master the basics of the Stabilised Approach. It's not hard."

Of course, I am not saying there is nothing new to learn, and no additional traps for the unwary bush-pilot to fall into. There is plenty to catch you out! My point however is that the method of flying, of landing, of taking off, shouldn't be any different, and in many cases it really is a matter of going right back to basics to learn the fundamentals properly, and ingrain them into your flying psyche.

For example: An airline pilot makes his approach down an ILS at an international airport on a 3 degree glidepath, and expects to see a certain 'picture' out of the cockpit window. A GA pilot in his 172 should be doing the same thing and should see the same picture. A bush-pilot in his souped up Piper Pacer landing on a mountain strip should be no different.

The main errors I see nearly every day that typical pilots (students/PPLs/CPLs/instructors alike) make are:

1. Approach not stabilised
   - Approaching too fast
   - Too high or too low on approach
2. Not flying in trim at ALL times
3. Not picking a fixed touchdown point
4. Not going around if touching down too far into the runway

By far the most common fault without a doubt I would say would be approaching way too fast. The consequences of too fast an approach are:

- You are constantly fighting against the aircraft to get down.
- If you get too high you are left with very few options for losing height apart from shoving the nose down further – which only has the effect of increasing speed more, and you are then really just along for the ride.
- It is near on impossible to touch down at a nominated point.

The number of pilots I hear complaining that their aircraft has a horrible tendency to "float" on landing astounds me. There is only one reason an aircraft floats on landing, and that is simply that it is going too fast. My Cessna 172 has a published stall speed with full flap of around 40 knots. An approach speed of 1.3 Vs works out to be 52 knots. Why is it then that 75% of pilots make their approach at 65 or 70 or even 75 knots? Of course it is going to float, and of course you are going to touch down half way into the strip, and of course if the grass is wet and there is a little tailwind and the stars don't all quite align you are going to go through the fence at the end! It isn't rocket science.

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Nail that Speed.

So we have established you must approach at the correct speed, which is a lot slower than many pilots typically fly. I find that many pilots have an irrational fear of slow flight. That is not always in itself a bad thing as it is merely self-preservation instincts kicking in, but if you can fly a nice tidy trimmed approach at 1.3 Vs you should not be scared of what the ASI is showing. Go and do a few stalls, and look at where the nose is pointing when the wing finally gives up… it is pointed well and truly UP. On approach, at 1.3 Vs I can assure you the nose will not be pointing up, and the aircraft is also descending, which means you are not holding power and 'G', therefore there is very little to no chance of stalling.

One great little trick I was taught very early on when learning to fly the Pacer is to take note of the angle of the bottom of the wing. This is easier to do in a high wing aircraft, but still works amazingly in any aircraft type.

The trick is to keep the bottom of the wing horizontal in all aspects of flight – in cruise; downwind; base leg; and finals.

On approach, if you continually trim the aircraft so that the bottom of the wing is horizontal at all flap settings, you will magically find that the speed will be perfect at all times. You will never need to look at the ASI again! An exception to this rule is when in the flare to land. As you are flaring a nose wheel aircraft, or a taildragger into a three point landing, obviously the rule does not apply as the nose will be pointing higher. This is the one situation when you are actually trying to stall the aircraft onto the ground.

So as you continue the approach onto finals and apply full flap, you will need to trim back more, but if the bottom of the wing is kept horizontal, the speed will decrease with each increase in flap (more drag). Now, here is the bonus with this trick that many pilots don't realise. Because your speed is now lower than you might be used to, more power is needed to maintain the approach profile. This is a good thing. Holding a little more power gives you, the pilot, control.

If you get a little high, all you do is reduce power. If you get a little low, increase the power a little (20-30 rpm is often plenty). The critical thing is to keep the nose attitude the same right throughout the approach.

It is the nose attitude that sets your airspeed. The nose attitude is non-negotiable. Use power to control your descent profile.

So, next time you see an aircraft on finals with the nose pointing down and with the wind whistling past the wings at about 75 knots, watch the touchdown closely. I guarantee it will be a 'floater'. You can't land a plane when the wing still wants to fly. You are fighting the laws of physics, and nature always wins :-).

See that Trim Wheel? Use it. It's there to make your life easy!

Some pilots use the elevator trim rarely. Others use it sometimes. Good pilots are fiddling with the bloody thing all the time. Watch a good pilot's hand on the control yoke. He will be holding it lightly with only two or three fingers. He can do this, because he is keeping the elevator in trim constantly. It gives him time to focus on other more important things without having to actually worry about flying the plane all the time.

Anything that will upset the natural balance of the aircraft needs a corresponding trim change… any change in throttle setting; flap changes etc. It's there to make life easy for you. Don't forget to use it – often!

Pick a Touchdown Point, and stick to it.

Airline pilots are trained to touch down on the 1000ft markers every time. Bush-pilots by necessity must touch down at the correct point or they will likely career though the ditch at the end of the strip.

Why is it that many GA pilots feel that touching down on the line every time is not an important consideration? It's not that they don't have the skill – of course they have the skill – it's not very difficult!

I'm sure the answer is a) that most times they can get away with it at the local airfield, and b) that the training establishments don't make an issue of it.

A while back I watched a Cessna 172 touch down at Omaka well past the half way mark. After taxiing to the fuel pumps, out climbed the student - and a very experienced instructor. When I queried why they landed so long, the answer was that the student had only done a few hours in the 172, and was still getting used to it. I bit my tongue at the time, but letting this behaviour go unchecked is like letting your kids get away with pinching biccies out of the cookie jar. It will only develop into worse habits, and one day the student will end up tangled in the fence at the end of the strip.

Be proud to Go Around.

If you have made a hash of the approach and can't touch down on the line without seriously upsetting your nice stable approach profile, there is only one thing for it... go around and do it again, and again, and again until you get it right, and can do it every time. There is no point going strip flying until you can do this every time at the home airport on a 1000m runway.

We teach go arounds to students but it is very rarely I ever see one used. Many pilots are more than happy to merrily float past 50% (or more) of perfectly useable runway, but seem to feel very uncomfortable with going around due to a mis-judged approach. I would like to suggest that the situation should be reversed.

There is no shame in mis-judging an approach. We all do it – even highly experienced 777 pilots at San Francisco have been known to stuff it up! There is no shame in going around. It is simply a way of saying to everyone watching that you have very high standards, and that the previous approach wasn't quite up to your expectations. By floating over half the runway, what you are actually saying to everyone watching is that you have very low standards, and you don't give a stuff where you touch down – as long as you stop somewhere before the end of the vector it's ok with you.

In summary

So, to summarise, you can see that the first step to becoming a bush-pilot legend is to master the basics of the Stabilised Approach. It's not hard. Just be disciplined with yourself, and don't get slack.

1. Nail that Speed
2. Use the Trim
3. Pick a Touchdown Point – and stick to it
4. Be proud to Go Around

Once you master these four basics, you are all but ready to strap on your mighty bush-plane and get out flying on some back country airstrips!

Go Bush Flying

If you'd like to go bush flying and train with Craig, visit www.soundsaero.co.nz/bush-flying-introduction to find out more, or call Craig on 029 890 4910.

Gavin Conroy image

Riverbed landing, Marlborough.