HAPPY LANDINGS

A stressless landing is way more likely if you monitor the advisory lights and fly a 3-degree approach.

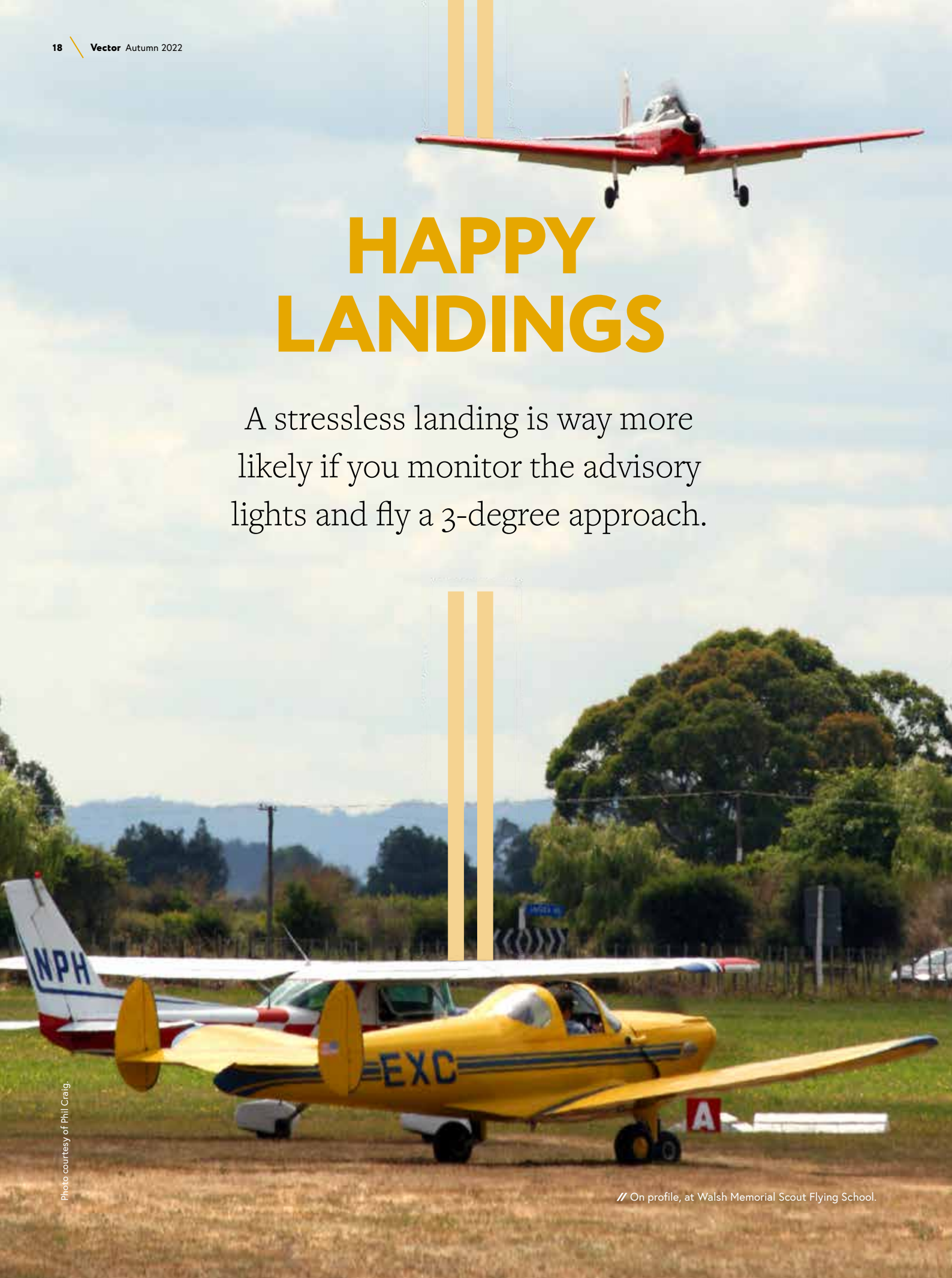


Photo courtesy of Phil Craig.

// On profile, at Walsh Memorial Scout Flying School.

In the past three years, there have been 1065 reported occurrences during the approach phase of flight – including missed approaches, go-arounds and abnormal approaches.

"Wind conditions nothwithstanding, those statistics reflect a potentially concerning number of non-stabilised approaches," says CAA Aviation Safety Advisor Carlton Campbell.

"There are many factors in a stable approach – configuration, speed and power setting – but one of the most important is using the 3-degree glideslope.

"It means you'll clear obstacles on your approach and reach your aim point."

It's about discipline

Ab initio pilots are taught to fly a 3-degree profile at a stable speed. And that's exactly how even the largest jets are landed.

The 3-degree profile is safest, no matter what size the aircraft, says Massey University School of Aviation CFI, Paul Kearney.

"There's a common belief that a shallow profile helps a pilot land on the right spot.

"But the shallow profile normally just takes you past your landing point. A 3-degree profile will put you more accurately on it.

"Apart from clearing obstacles in most situations (on rare occasions, unusual obstacles or terrain make it unfeasible) the 3-degree glideslope is also the safest for gliding to the runway if the engine fails and, if also at a stable speed, for 'flying neighbourly' by abating aircraft engine noise.

"But the main reason for flying a 3-degree approach is about discipline.

"It takes more skill to fly a 3-degree profile than just flying in at any steep or shallow angle," Paul says.

Carlton Campbell says discipline with the approach profile is important because the consistency enables the pilot to recognise early changes in any variables such as wind, power and flap application.

"Over time, the eye gets attuned to the 3-degree profile and you can apply it in any circumstances to achieve your aim point on any surface," he says. "You can recognise that profile even where the aids – such as the advisory lights – are not available."

Using the PAPI lights

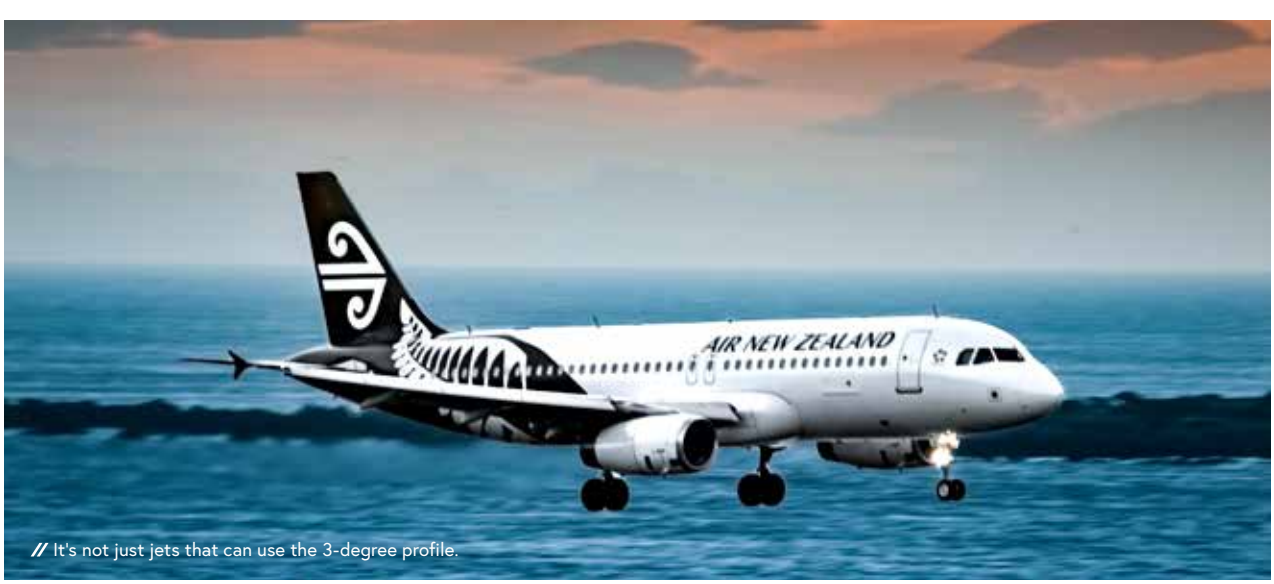
The Precision Approach Path Indicator (PAPI) is the runway-side set of four lights guiding pilots down a 3-degree glide path and crossing the threshold at 50 feet – generally considered the safest height for landing on 'the spot'. Four red lights, you're too low; four whites, too high. Two red and two white is the ideal.

Paul Kearney says there's a misconception that the PAPI is only for the use of large aircraft.

"If you look at Paraparaumu as an example, the PAPI there is set up at 3-degrees and a threshold crossing height of 50 feet. A pilot of any aircraft landing at NZPP could use the PAPI lights to set themselves up on the correct slope to land at the correct spot."

From the lights to the markings

The accuracy of the PAPI wavers the closer to the ground you get. So the advice is, at about 200 feet AGL, move from monitoring what the lights are telling you, to scanning for the runway touchdown markings – 'fixed distance markings' – and where your aircraft is in relation to them. »



// It's not just jets that can use the 3-degree profile.

Photo courtesy of Yuvraj Kaintel/instagram.com/xwb.aviation.

// Once a pilot has a clear picture in their mind of the 3-degree profile they'll find it easy to fly at any runway. //

The Summer 2018–19 edition of *Vector* advised, "Fixed distance markings consist of a rectangular marking on each side of the runway centreline, 300 m from the threshold. Each rectangular marking is composed of a series of thin longitudinal stripes. This is where you should aim to touch down. These markings work on the assumption that you pass over the runway threshold at a height of 50 feet."

Some VFR pilots believe it's best to land as short as possible on the runway, to give plenty of distance to stop. But the internet is awash with videos of planes landing too short, and ploughing into stockbanks, or even hitting cars.

Carlton Campbell says if pilots use the 3-degree profile which gives them the 50 ft clearance over the threshold, and they land short, it's not as much of a threat as if they aim at the threshold and land short.

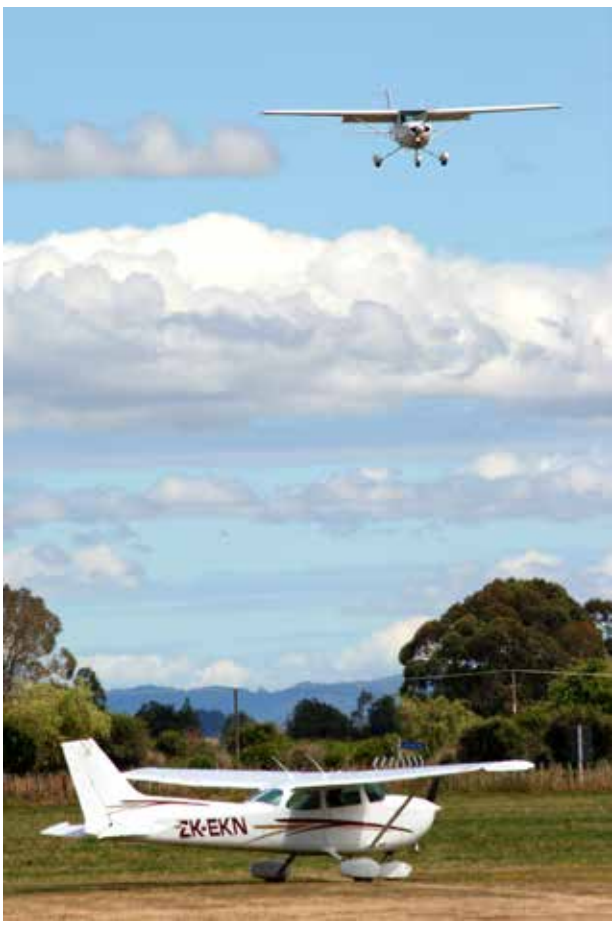
"You may take out the fence!"

The role of instructors

Paul Kearney says that using approach aid systems such as PAPI, if available, to help the student learn what the profile should look like is very much encouraged in flight training.

"The instructor can always ask ATC to turn the PAPI off to check if the student has the picture in their mind of the correct stable 3- degree approach profile.

"As instructors we could take more time to explain, and even more importantly, show, a pre-solo student exactly what the term 'profile' means.



// Chipmunk at Walsh Memorial Scout Flying School clearly coming in at least 50 feet across threshold.

Photo courtesy of Phil Craig.

"In their first straight and level lesson, we take time to show exactly what the term 'attitude' means. But in my experience of examining flight instructors, we get into the circuit and constantly use the word 'profile' without really understanding or showing the student what it means.

"The 3-degree approach profile is *the angle between the aircraft and the touchdown point* on the runway. An instructor can very clearly show this angle by starting slightly low on the base leg then entering a shallow climb while the student watches the angle rapidly change.

"Once a pilot has a clear picture in their mind of the 3-degree profile they'll find it easy to fly at any runway, irrespective of how far away the aircraft is from the runway, or when to start the descent if joining on the final leg."

Comments or queries?
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