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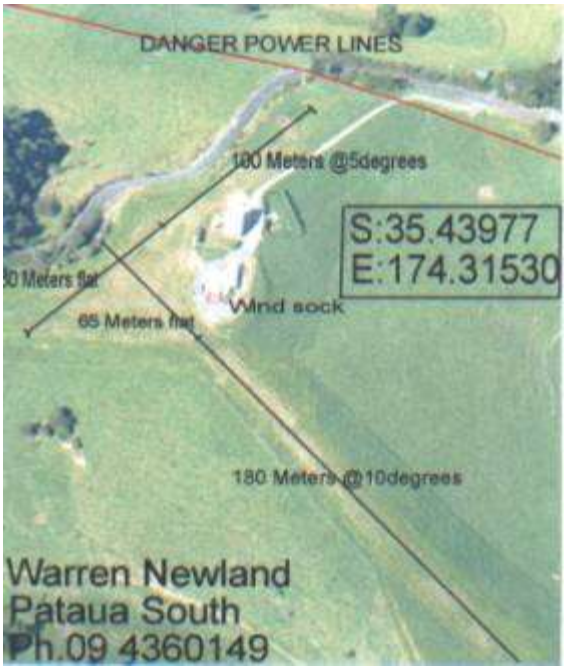
Wind shear in flight: Taken from Orewa beach on a nice morning with only light winds... looks like a nice day for a fly. And it was nice too, but look under the nearby bank of cloud, observing the distant clouds just above the horizon (to the centre right), over Great Barrier Island. The distant clouds have three bands; lower band on the horizon not moving, a thin band above that moving left, and a band above that moving right. It could be rough in the boundary between those bands, which is no problem so long as you recognise it, slow down and warn your passengers.

Wind shear over Gt Barrier

Takeoff Performance on Sloped Runways - *Subscriber Question on 'Pilots Tip of the Week' webpage:*

"When taking off from a sloped runway, which factor has a more significant effect on take-off performance - runway slope or the wind?"

Pataua South Airfield. Warren Newland (supplier of some very good propellers) has a strip that is a good example of a 'sloping' runway. The longest of the runways is 245m with a flat touch down area, a steep 10 degree (12%) slope up the centre section, (more than twice as steep as the Auckland Harbour bridge), then a flat top. The strip feels much longer due to the steepness and is no problem if handled with consideration for the conditions.



Pataua South Airfield from SW [Warren Newland photo]

Answer from 'Pilot Tip of the Week':

"The adjustment factors used by at least one manufacturer are as follows: Considering winds for take-off, subtract 10% ground roll for each 12 knots of headwind. Add 10% ground roll for each 2 knots of tailwind up to 10 knots.

From this, you can see that tailwinds are evil. They hurt way more than headwinds help.

Now, considering runway slope on take-off - an upslope of 1% causes a 22% increase in ground roll at sea level, while a 1% down slope only decreases the ground roll by 7%.

Here again, the upslope hurts a lot more than the downslope helps.

So given these figures, let's look at a problem wherein we could either take off into the wind with a 1% upslope or downwind and a 1% downslope.

We learned that the upslope will cost us a 22% increase in ground roll and if we have a 6 knot head wind, we should get about 5% of that back for a total increase in our ground roll of 17%.

If we choose to take off downwind and downslope, we will get a decrease of 7% due to the slope, but an increase of 30% due to the tailwind. So we have a total penalty of 23%.

In this example, the upslope take-off into the wind is the better choice from a ground roll standpoint. However, these calculations only consider the ground roll portion of the take-off. If there is an obstacle involved, then another calculation is needed and the effect of the wind reconsidered. Also, don't forget that the condition of the runway and the aircraft can have a significant effect on the take-off performance.

Remember, these numbers are for one type of general aviation aircraft and may not be applicable to any other aircraft. Always use the data from your POH and apply it very conservatively."

Harvey Lockie comments: With a sloping runway, in some conditions a landing is possible but not a takeoff (or the other way around). Before landing consider whether you'll be able to get off again... else you might have to wait on the ground for a long time waiting for a wind change.
E.g.: If the wind is blowing downhill then it is going to be easy to land with both wind and slope assisting you to stop. But what then? On leaving you will have to choose between taking off uphill, which is usually not possible if the slope is much more than 1%.

Or downwind, which needs careful thought before you start your takeoff run, lest you get an unacceptably close look at the fence at the end. Just to make it interesting, braking will be poor when running down a sloping grass runway, and there can be unpredictable downdraughts on the lee side of a hill. Personally I'm happier landing uphill with a tail wind. Unless it is very strong there is no problem stopping up a slope and the takeoff is easy downhill and into a steady rising airflow.
For an uphill landing you do have to commit to the landing from some distance out, as most aircraft can't out climb a slope, but you can have several low approaches at gradually reducing height to be happy with the conditions before going for the landing.
Before doing a sloping landing for the first time, have some practice with an instructor to make sure all the factors are understood.

Approach to West Auckland Airport Parakai, NZPI 25: The Airport is more easily found now that there are more hangars (the white patch in the mid right on this photo). The concrete aggregate plant at the confluence of the Kaipara and Kaukapakapa Rivers is a good marker too. Most pilots fly a gently curving approach from early right base 25 to late final 25, which gives a good set of escape routes. Flying a rectangular circuit is not as good as it takes you over a valley with no easy way out in event of problems.

Mid base runway 25, Right hand

Late approach 25: Turning final late 25. There is often lift over the hill, which turns to sink as you cross the river. Photos from John Crone's Tecnam, ZK-TZS. When joining West Auckland NZPI, *because it is a Drop Zone,* ***always join crosswind, downwind, base or final****.* The wind direction is usually obvious from the toitoi plants in the area or wind on the

water. It is not necessary to wait for skydive parachutes to be down so long as you fly a wide circuit. Never join overhead because of the frequent skydiving.

Turning final 25

Armac Chariot Racing: Nice photo from the Auckland Regional Microlight Aircraft Club's newsletter, with explanatory caption…

" …. planning on a modernised retake of the Ben Hur chariot race with a Rotax 912 ULS powered one. There have been a few teething problems as the high thrust line of the motor pulls the rear of the chariot down, in spite of 100lts of water in containers at the front, with disastrous consequences for the propeller tips ..."

ULBI 'Klassik', ZK-DTT: This aircraft has been in at Leading Edge Engineering having the brakes upgraded from single to differential brakes. With tail dragger aircraft, ground control can be difficult with the limited steering available from the small tail wheel... but with differential brakes (brakes separately for each wheel on the two brake pedals) there is very precise control on the ground and the ability to almost turn round one wheel.

The 'Klassik' ZK-DTT nicely finished in polished aluminium... the 'paint' weighs nothing. DTT was previously on the German Aircraft register before being imported to NZ.

Hangars nearly finished: The new hangar block is nearly finished, with the doors being fitted now. The concrete work will be done as soon as the wet ground hardens enough for this to be practical. The existing taxiway 'Y' is to be extended both ends, to be continuous from the new southern hangars to the fuel apron at ‘A’. The existing ‘B’ taxiway will be extended to the north to join the new ‘Z’ taxiway to serve the northern hangars.

Southern hangars. As you would expect the Northern hangars back onto these.

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