



WINDSHEAR WAKE UP

An encounter with low-level windshear leaves a young commercial pilot struggling to stay airborne. Name withheld by request.

I was just three weeks into my first full-time flying job when a bad landing nearly forced me into early retirement. I was employed on general charter duties flying a Piper Comanche 250. My passengers included cattle and sheep buyers, vets, telco techs, bookies, tourists, farm machinery mechanics and injured stockmen – among others.

I had about 800hrs in my logbook, quite a bit of that in a 180hp Piper Comanche. The 250hp model handled almost identically, though to a relative beginner, it felt a little heavier and less forgiving in the landing configuration. But I believed Comanches didn't hold any surprises for me. I was wrong.

The job on this day was to fly two sheep dealers and a stock agent to a strip on a very remote property near the NSW/Queensland border, then to another about 300nm further northeast, and finally to return them all to our base in Western NSW, via a fuel stop.

The company's airstrip register showed no problems with the first strip, which comprised about 3km of unobstructed claypan.

The second strip was a little trickier, and while it was theoretically long enough, there wouldn't be much runway left over. The strip's usual takeoff and landing direction was into the west because of the prevailing northwest and southwest winds. The notes also told me that longer grass at the western end sometimes concealed wild pigs and other animals.

To top it off, the strip was described as "surrounded by fairly tall trees". Clearly I would have to use all my short-field landing skills.

Good price: At this point, it's necessary to provide some background about the purpose of the flight. The old "bush telegraph", meant the business of my passengers was likely to become well known within minutes of a deal being made, and our customers definitely didn't want their business publicised. Therefore I'd been briefed that after we departed each

of the two strips, I was to pass an innocent-sounding message to the company on HF radio, which when decoded, would in fact detail how many sheep (if any) my passengers had bought, their general condition on a scale of one to five, and the agreed price.

This information would be passed on to the stock agent's company back at our base, and would influence a decision on whether to confirm or waive another large purchase, on which an option was held. They needed the second message to reach them before 3pm. If they didn't receive the message by then, they would assume no purchase had been made, and buy the other sheep that were on option. This turned out to be a bad idea.

The first inspection went well, and the buyers signed up for an astronomical number of drought-affected sheep at a favourable price. The passengers stood around chatting with the grazier and his agent until I reminded them that we were a little behind schedule for the second inspection.

▶ About 20ft above treetop level and on a normal approach slope, we flew through a patch of moderate turbulence, and very suddenly the aircraft began to sink alarmingly.

Almost two hours later we were in the circuit for the second strip, which was easy to find despite some dust haze because it formed a long rectangular gash through fairly dense trees. On an overfly the surface looked OK, but the bare patch faded into what appeared to be rather long grass half way down the 1,000m strip. I resolved to put down as soon after the threshold as possible and try to stop before we got to the longer grass. The remains of a tattered windsock drooped with no apparent movement.

The PA-24's stated stall speed range was 55-63kt depending on configuration and weight, and company policy was to adopt a minimum of 1.2Vs as the approach reference speed.

We'd been flying for almost four hours, the passengers weren't heavy and had no baggage, and the calculated approach speed for the weight and configuration was 69kt. Lined up on final in apparently

calm air, I noticed and corrected for a slight drift to the left.

As I set up the approach with a little power and full flap at 70kt, I noticed that a reasonable approach gradient had been provided by felling (but not clearing) the timber on the undershoot. This would allow me to maintain a normal glideslope to the threshold. There was also a fence across the end of the strip.

Turbulence: About 20ft above treetop level and on a normal approach slope, we flew through a patch of moderate turbulence, and very suddenly the aircraft began to sink alarmingly.

A glance at the ASI showed airspeed had decayed by some 15kt without any attitude change, and was wavering around 55kt. I applied more power. The sink decreased but was still likely to dump us among the fallen trees in the undershoot.

I applied even more power, which allowed us to clear the fence, barely. I arrested some of the sink but at about 10ft the aircraft lost interest in flying. The left wing seemed to stall first and with a still-high sink rate we arrived on the left-main wheel with an appalling crunch, the other two wheels hitting the ground almost simultaneously.

The sheep had been yarded in a paddock alongside the strip, and the inspection was made from a 4WD. A deal was made fairly quickly with the passengers eyeing their watches, and myself reflecting on the near-disaster created by the alarming, sudden and unexpected wind gradient.

Back in the aircraft, somebody suggested that as the time was 2.45pm, we should try to get off the ground as decisively as we had sunk to earth. But when we got airborne, the HF radio was silent – even the customary static was gone. I later found out that landing had jarred the set's antenna lead right off the back of the set.

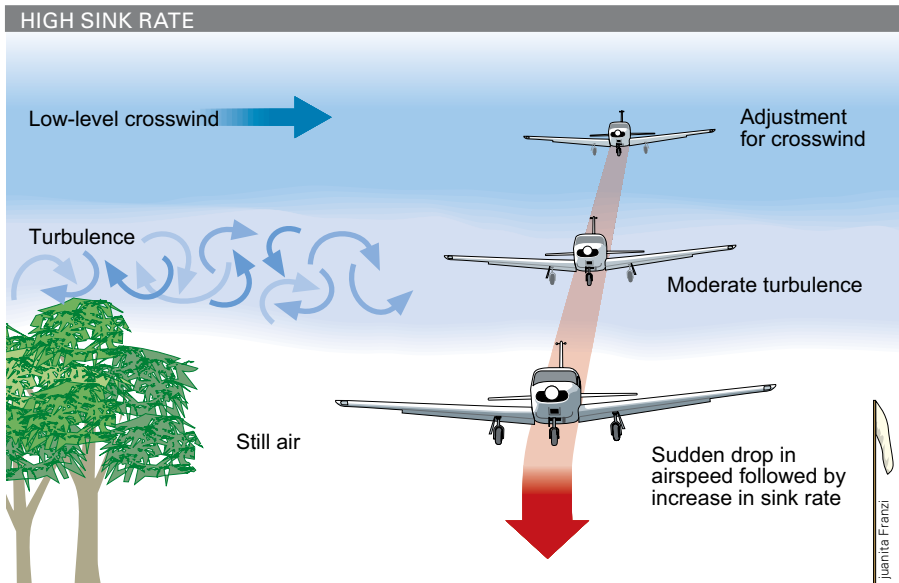
Up to that point the passengers had remained reasonably good-humoured, possibly not realising how close they had been to crashing amongst fallen trees. But when the vital message couldn't be transmitted, they were accusingly silent. When we landed there was a dash for the phone at the terminal, and a brief phone conversation before one of the buyers walked across to the aircraft.

"We now own 18,000 more skinny sheep than we need, no trucks to pick them up, and no feed for them. Would you like to buy them in situ?"

Since that event, many years ago, I've witnessed quite a number of equally botched landings on bush airfields surrounded by trees, and I've observed that the backgrounds of the pilots involved had probably not helped them understand the cause, the effect, or how to avoid such an outcome.

The event caused me to develop my own methods of anticipating the problem, including noting forecast low-level winds, and assessing wind by the movement of dust, treetops and windmills against windsocks and the surfaces of dams.

\$ 500 Highly commended



Warning signs: The only warning the Comanche pilot had was a noticeable drift on approach suggesting considerable low-level wind despite indications of calm air at ground level.

ANALYSIS

DEALING WITH DOWNDRAUGHTS

This pilot is right in saying that there are a number of runways where buildings or nearby hills create their own "wake turbulence" when a crosswind is blowing. The condition is known to have been a contributing factor in several notable accidents, even at licensed aerodromes.

In this incident, the only obvious clue this pilot had was the anomaly of noticeable drift on the final approach, suggesting low-level wind, despite apparently calm air at ground level.

In these conditions, windshear is created by the trees and terrain interlocking with the lower level of a moving air mass and stopping its low level movement. This provides observably calm air at surface level, a moving (but possibly not turbulent) air mass above, and a layer of disturbed air (as observed by the pilot) at the level where the two air masses interact. For that reason, sudden turbulence at or near where the interaction would be occurring is often a clear warning of a possible problem.

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The same situation can also create actual downdraughts, in the same way that lee wave turbulence is generated by wind passing over a ridge. This was quite possibly part of the problem this pilot experienced.

Chief flying instructors and chief pilots are urged to point out the potential for problems at every opportunity.

Any pilot unaccustomed to narrow airstrips surrounded by trees, who may fly into a similar situation, should consider the lessons learnt by a fellow pilot who survived to relate the experience.