

No Engine, No Problem

Glider pilots love powerless flight for its own sake – but they also say gliding skills make much better powered pilots.

When the glider pilot, Captain Chesley “Sully” Sullenberger, safely guided US Airways Flight 1549 on to New York’s Hudson River in January 2009, he was rightfully lauded for his flying skill.

A flock of Canada geese had taken out both engines of the A320-214, but despite the potentially catastrophic landing, all 155 people on board lived.



Twenty-six years before the so-called ‘Miracle on the Hudson’, was the ‘Gimli Glider’.

An Air Canada Boeing 767 – with engines out due to fuel exhaustion – safely landed at Gimli Industrial Park in Manitoba, Canada. Its captain, Robert Pearson, was also an experienced glider pilot. All 61 people on board survived.

Former Chief Flying Instructor for Gliding Manawatu, Russell Richardson, says those successes should not be that surprising.

“Glider pilots fly in a permanent state of engine failure. Their heightened awareness and their intense focus are borne of the fact they have no engine to get them out of difficulty.”

CAA’s investigator of Aviation Related Concerns, Roger Shepherd, has recently discovered the delights of engineless flight, calling it a “stunning experience”.

But the 4000-plus hour fixed wing pilot says learning to glide has also been highly educational for him as a powered flier.

Reading the Weather

Roger says that although what’s going on with the weather has always been important to him as a pilot, it’s paramount in gliding.

“We general aviation powered pilots tend to look at the sky in a fairly simplistic way. It’s wet or cloudy or sunny or windy or calm.

“But a glider pilot hones a heightened sense of what’s going on in the atmosphere, piecing together all the bits of met information to come up with a comprehensive picture of what’s happening now, and what’s going to happen soon.”

Roger Read, a 2000-hr glider pilot, and an 18,000+ hr powered pilot, agrees that successful soaring pilots have a profound understanding of the weather in its widest form, as well as of micro climates.

“Glider pilots learn to operate safely and comfortably along a wide spectrum of weather – and terrain – in which many powered pilots would be uncomfortable.

“We have to maximise overall flight performance by making the most of the weather conditions. If we launch to, say, 2000 ft AGL, in still air we would be back on the ground inside 20 minutes. So we try to extend our flight time by soaring in air that is rising faster than we are sinking through it.

“The skill comes in knowing where such rising air is likely to be, when it will be there, how long it will be there, and then how to stay in it and use it efficiently.

“We talk about our ‘soaring engine’. That’s the interaction between the sun, wind and terrain, and its effect on the local air mass.

“Having to understand that gives us a finely tuned awareness of our environment.”

Russell Richardson calls it “flying seamlessly to the conditions”.

“If we don’t know how to use the energy of things like thermal lift and ridge lift,” he says, “it’s more likely to result in an outlanding (landing other than at the usual place) which is a nuisance at best, and potentially dangerous, if you don’t know what you’re doing.”

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Photo courtesy of Geoff Soper Photography.

Roger Shepherd agrees that instead of trying to battle the elements, glider pilots use the ups and downs of air flow.

“Going with thermic and orographic turbulence means the airframe and the pilot are not as fatigued as those under power. It’s also a smoother ride for any passengers.

“The way GA pilots generally try to adhere to a specific or chosen height during cruise is often impractical and possibly dangerous – especially when flying VFR in areas like the mountains of the South Island.

“Gliding allows powered pilots to experience both the unique mountain wave and wind conditions in New Zealand, and the large increases in economy and performance to be had from such flying.”

Awareness

Roger Read says situational awareness (SA) is not something a pilot should suddenly start to employ when conditions get awkward.

“It will most likely be too late to be of full use. SA is really about constantly thinking ahead.

“For glider pilots, our SA begins on waking up on the morning of a flight, and active lookout starts as we position out on the airfield for a launch.

“Gliders have long wings, and while positioning for a launch, are often manoeuvred near to others. A misjudged positioning turn has the potential to inflict serious damage if wings collide, so everyone involved is alert to that possibility.

“Once in flight, SA is not only about attention to the conditions and the energy in the environment, it’s also about monitoring our own wellbeing.

“Our cockpit is a confined space and not always ergonomically friendly, particularly when it comes to those long flights, which can be up to 13 hours, and are frequently up to five hours.

“A lack of food or water, heat or cold stress, or hypoxia are all capable of undermining our performance.

“We have to keep checking how we’re feeling, because we must be well placed to make sound judgements and decisions.”

While all pilots know it’s ‘Flying 101’ to continually check for suitable landing areas, glider pilots actually do it. They say outlandings are part of the scene for them and normally no big deal. They believe they learn more about field selection than GA pilots generally do.

Roger Shepherd says a bit of gliding would improve that practice in power pilots.

“It’s a great safety habit,” he says.

See. Avoid.

“Once airborne,” says Roger Read, “the very nature of seeking out the rising air draws us into close proximity with other gliders seeking the same lift.

“Depending on the type of lift – thermal, ridge, mountain wave, air mass convergence – the glider pilot will often be operating very close to other gliders.”



Russell Richardson agrees, saying it's a lifesaving skill to be constantly on the lookout.

"Apart from all those gliders heading for the same lift, there are the additional hazards of operating close to uneven terrain, near cloud, or a combination of both."

Roger Read says the design and colour of gliders make them difficult to spot at times, even for other gliding pilots.

"Long wings, small frontal cross section, lack of lights, absence of contrasting markings and paint schemes – gliders are typically white to ensure heat stability of the FRP materials they are made of – and it makes seeing other gliders that little bit harder.

"And of course, they're silent. So, as with everything else in gliding, we have to be extra-vigilant as to where other aircraft might be."

Pilot versus Machine

Roger Shepherd says a glider pilot flies according to their senses, rather than according to instruments.

"The focus of a glider pilot is outside the cockpit. The attention of the powered pilot is probably inside – probably far more than is advisable – because the lure of the instrumentation is so great."

Roger Read says traditional flight instruments are of little use to the glider pilot.

"The slip ball is replaced by the very accurate piece of string taped to the outside of the canopy where it senses and

indicates any slip or skid. The variable speed indicator is replaced with a more sensitive instrument called a variometer that also filters out changes in climb or descent rates, due solely to airspeed fluctuations.

"The 'Mark 1 Eyeball' is used to judge height and direction, as unlike in a high proportion of powered flight time, both are rarely held constant."

Roger Read says that 'lookout' is the highest priority from day one in a glider pilot's training.

"They learn to fly smoothly and accurately while looking outside the cockpit to ensure the airspace they are flying towards is clear.

"They fly by attitude, the sound of the glider and the feel of the controls.

"Sure, we have instruments, often including some very sophisticated GPS-based navigation and performance computers, but they are usually augmented with audio tones allowing the pilot to monitor the information they're providing, without requiring significant and potentially hazardous time, head-down.

"And yes, we also have our own version of TCAS called FLARM that augments our visual lookout.

"But one key difference, put simply, is that a power pilot looks inside to see what the engine that keeps them airborne is doing, whereas a glider pilot looks outside to see what the 'engine' that keeps them airborne is doing."

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Powered powerless flight: an ASH25M two seat, high performance, self-launcher.

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What a Power Pilot Can Do

Many old hands are increasingly expressing anxiety that manual flying skills are taking a back seat in the modern cockpit.

The safety officer for UK-based easyJet, is a former world gliding champion.

Sarah Kelman says gliding has helped her skills as an Airbus captain, particularly with situational awareness, and with her ability and confidence in recovering from non-normal situations.

To illustrate, she told a Royal Aeronautical Society conference in 2013, the 'unusual attitudes' about which a commercial pilot may be very anxious, are business-as-usual for the glider pilot.

She maintains that teaching gliding skills to airline pilots would go some way to arresting the erosion of manual flying skills.

Roger Shepherd agrees that powered pilots – at any level – could do worse than get some gliding experience.

He says the best value his powered brethren could get from a few hours gliding would be a few sorties of ridge soaring, or very low level thermalling.

"It's a chance to get the mind thinking about visualising where the horizon is when down below a ridgeline, judging about turn radius, the room to manoeuvre, and not being afraid of the angle of the bank. Gliding is all about rudder-aileron coordination."

Russell Richardson says gliding puts a different perspective on things.

"It's changed my view, for instance, on powered aircraft involved in a forced landing.

"It's shown me that a Cessna or Piper can be landed just as safely without an engine. If you know what you're doing."

Ninety-One Seconds

That's how long it took a glider pilot to safely land his powered aircraft after "the engine went bang" during an Auckland to Raglan flight.

Read Jill McCaw's description of what happened in "Grateful for Gliding" on page 52 of *KiwiFlyer* (Issue 51, 2017 #2), downloadable from www.kiwiflyer.co.nz. ■

Modern gliders can have very sophisticated onboard computers, but a good glider pilot keeps using the Mark 1 Eyeball.

Image courtesy of Milan Kmetovics, Glide Omarama.



Get it Right this Summer

Pilots like to blow away the cobwebs over the warmer months when aviation events really start humming, so it's more important than ever to follow the basics.

The sky is typically more congested over summer, and aerodromes can become a hive of activity.

You're more likely to fly further afield, venturing into unfamiliar territory.

So the message is simple: Check NOTAMs and AIP Supplements before you take off.

How else will you know about a big hole in the surface of a runway, or that a flying competition is in progress?

Supps are issued to advise pilots of temporary restricted areas associated with events such as airshows and competitions, including those featuring model aircraft. Temporary airspace associated with an emergency will be promulgated by NOTAM.

Yet there are often reports of incursions into temporary restricted areas, or of aerodrome operators having issues with pilots landing on runways that have work in progress.

The CAA's Aeronautical Services Officer, Paula Moore, says consulting NOTAMs and AIP Supps is an essential part of a preflight briefing.

In addition, Paula says pilots should update their knowledge en route. So check with FISCOM that a new NOTAM has not been issued since becoming airborne.

School's in Session

Every summer a small number of aircraft bust right through the Matamata temporary control zone.

Aircraft come along unaware that the Walsh Memorial Flying School is in session, or that a control zone exists there.

There have been times when aircraft have joined the circuit on the wrong frequency or for a runway other than the one being used.

This can be avoided by consulting NOTAMs and AIP Supplements, see the information on "Summer Traffic Busy Spots" on the back of this issue of *Vector*.

Email info@caa.govt.nz for a free copy of our NOTAMs and AIP Supps poster. It comes in both A4 and A2 sizes. ■