Twice as nice?

*Piston twins have gone out of fashion somewhat in recent years, but **Timothy Nathan*** *explains why his Aztec remains his first choice*

I have been operating an Aztec for more than twelve years. I use it for a wide variety of flights, from short inland VFR hops to seriously long trips into the Arctic. The "average" flight is probably VFR from Biggin Hill to Perranporth or Cumbernauld but my destinations range from farm strips to major international airports, and legs vary from 50nm to 1300nm. Recently I was asked what I would do if it were no longer available – would I replace it with a single (whether piston or turboprop) or a different twin? I soon realised that there is nothing I would rather own and fly than the Aztec. That is surprising, given the high hourly cost. It is also rather an indictment of the light aircraft industry that I would only want to replace a 30 year old example of a 50 year old design with another the same.

So why do I want a twin, and particularly an Aztec? Well, we must start by looking at the rather artificial divide between 'all MEPs' and 'all SEPs'. A well equipped Bonanza or TB20 is much more like a Baron or Aztec, in terms of performance, equipment redundancy and comfort, than it is like a Cub, whereas a Cougar or Duchess performs like a single with half its engine on each wing and typically is not de-iced.

So I will base the comparison between the Aztec and a mid-range IFR equipped tourer, such as a Hawk XP or Arrow.

Icing

The commonest reason that people seem to cancel flights in non de-iced aircraft is icing. I have never been one to get over-concerned about icing, and have from time to time carried a fair amount of ice on a non de-iced aircraft. Indeed I might go flying on a day when light icing is present in a height band. But the problem is that if icing is going to be present from the MSA up to FL100 you really cannot even think of getting the SEP out of the hangar. Of course, there are de-iced singles, but they are few and far between and the weight penalty can become quite burdensome.

Speed

Although at first glance going fast seems to be a luxury rather than a necessity, it becomes very relevant indeed when faced with a strong headwind. 50kt winds are not unusual at higher levels. This is nearly half the TAS of the average single, leaving it with maybe 70kts made good, whereas in a twin the groundspeed would be 120kts or better... nearly double the speed.

Payload

This is where twins, and particularly Aztecs and the larger Cessna twins, really score. With the original tanks filled to the brim it can still take six adults and their luggage. Even with the extra tanks I have had fitted, giving me

Top: under the circumstances, would you rather by flying the twin or the single? Above: a different angle on the Aztec Left: suitably be-hatted, author Timothy Nathan with his Aztec G-LIZZ in Spitzbergen

1,300nm range, I can carry four adults and a good deal of baggage. And if I have an engine failure I can climb at 450 feet per minute. Being able to take six people to a business meeting, or for lunch on the Continent, is a big plus. Even the capable singles cannot match this.

Crosswind

Fewer and fewer airfields are offering a cross runway. A typical SEP crosswind capability of 15kts means that the number of days which are outside limits at one end of the flight or the other reach significant levels. I believe that the demonstrated capability of the Aztec is 25kts, but I know from personal experience that it can cope with 40kts with no difficulty.

Runway requirements

This is one place where most MEPs lose out, though probably not to the extent that you might think. The Aztec will operate at MTOW in and out of Framlingham's 470m hard runway, but I am not happy with less than 700m of short, hard grass. This does mean that most strips are out of bounds, which is a definite limitation.

Engine Failure

I have had nine engine failures in my flying career. I know that they happen. This is why I always want a plan B available to cover the eventuality. Plan B in a twin is to divert at leisure. Plan B in a single should be to make a forced landing in a field. But that's rather difficult in hill fog, or even a 200-foot cloudbase, or at night, or over water, or over mountains. So if you fly a single and want to ensure that there is a plan B you are limited to flying over farmland, during the day, when the weather is reasonably good. This limits mission capability to such an extent that you might ask why bother with a night or instrument qualification? Added to this is the sheer joy of flying across water and remote deserts at very low levels. With passengers I rarely go below 150 feet, but on my own I often go down to mast-top height (avoiding boats laterally rather than vertically.) Doing such a thing in a single would be too risky for me.

Electrical or other systems failure

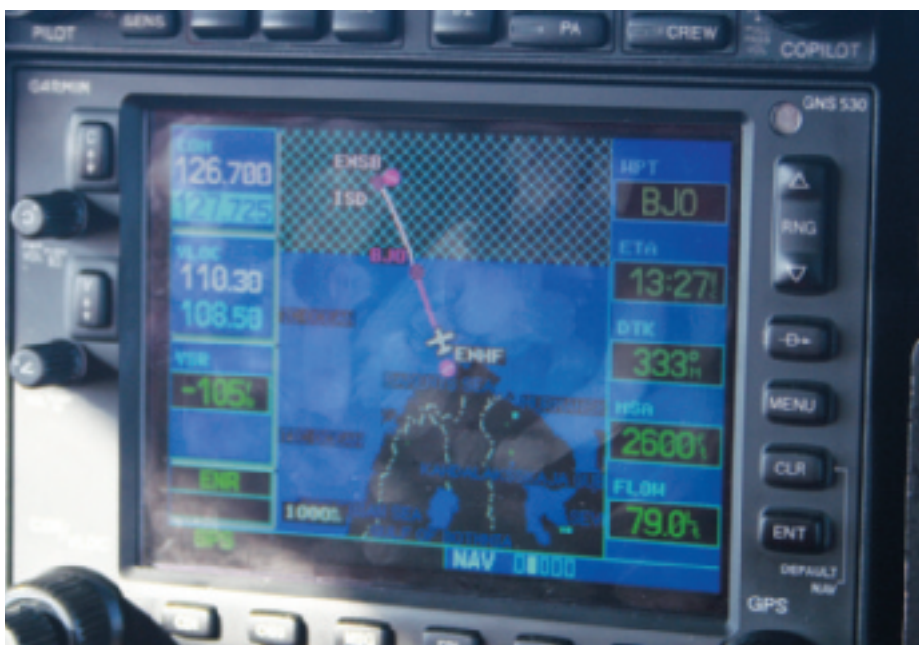
Almost as serious as an engine failure is an alternator failure in or above IMC. With no way of navigating or communicating you are left with some pretty unpleasant choices... flying triangles in the hope that someone will notice, then unrehearsed formation flying in cloud, or maybe dead reckoning to where you hope the sea is and then hoping that your guess at QNH is reasonably accurate. Similarly, loss of your single vacuum pump can be pretty fatal, particularly if you identify the symptoms late. There are, of course, singles with redundant ancillaries, particularly alternators and suction pumps, and that is what makes TB20s, Bonanzas and similar aircraft more suited to transport flying than 172s and PA28s.

The case against

There are also some arguments against twins on safety grounds. The commonest are:

Risks associated with single engine failures on a twin

Most GA twins are not certified to be able to continue flying in the event of an engine failure below 200 feet. Twin training concentrates on failures above 200 feet, recovery from such a failure and continuation of the flight. Unfortunately not enough emphasis is placed on the fact that below 200 feet the most prudent action is normally to shut down both engines and make a forced landing. The argument continues that if either engine fails, the result is a forced landing, and therefore the risk is at least doubled (I say at least because



Top: G-LIZZ flies legally over a built-up area, in this case east London
Right: fancy this in a single? Coasting out off the North Cape for Spitzbergen

engines are marginally more likely to fail on a twin because of greater vibration and longer control runs.)

This increased risk is real and must be taken into account by the twin owner, but, at least in my mind, is more than offset by having the second engine available in the cruise, especially when conditions dictate that a forced landing is unlikely to be successful (water, mountains, night, low cloud etc).

Furthermore the time for which the aircraft is exposed to risk is very small (less than 15 seconds per flight) compared to the time spent exposed to risk in a single.

Finally, the pilot can do a great deal to mitigate the risk (using the full runway, rotating at blue line, avoiding built up areas in the take-off path etc).

Less protection in a forced landing in a twin

People do argue that in the event of a forced landing, uninjured survival of the passengers is less likely because the aircraft is going faster and the momentum is greater, the occupants are not protected by the engine going ahead of them and that the gear may be up and therefore not in a position to absorb impact.

I do not know if this is true, but even if it is, I consider it mitigated by the fact that a forced landing is much less likely.

Currency

It is a cherished belief that the requirements for currency are greater in a twin than a single, both because the immediate actions following an engine failure are urgent and need to be off pat, and because the systems are more complex, so need greater knowledge and understanding.

I would be the first to agree that currency is vital in a twin. I would have thought that two flights of an hour each per month, with a practice EFATO every four months, would be a sensible minimum. However, I am not convinced that SEP pilots can manage on much less. The vital actions after an engine failure – converting speed to height, seeking a field, setting up a pattern, mayday call, briefing passengers, security, shutdown and so on – are scarcely less onerous than those required in a twin, and should be practiced regularly. So

Above: fantastic view, but there are times when a second engine is a great comfort Below: flying low over icy water, not a comfortable place to be in a single

while I accept that twins carry somewhat greater currency requirements, I am not convinced that there is much in it.

My bugbear is the number of amateur pilots, whether single or twin, VFR or IFR, who seem to think that currency requirements don't apply to them.

Greater risks taken by twin pilots

There is an argument, called Risk Compensation, that no matter how safe a piece of equipment or transport is made, overall safety is not affected because the user will take greater risks until the risk level reaches the same point as it had been on the less safe equipment. Its proponent, Prof. John Adams, believes that Volvos should be replaced with paper cars with spikes in the middle of their steering wheels.

Thus, a twin is not safer than a single,

because the pilot will choose to fly over water, in icing, at night, to IFR minima, where the prudent single pilot would not.

My counter argument is simply "…sure, maybe I am taking the same risk as an SEP pilot, but I am able to operate in much more difficult environments at the same risk." Which means I can get to my business meetings, the purpose of having the aircraft in the first place.

Cost and engineering

But is it worth the extra cost, and the extra downtime, that the extra systems bring with them? It is not just a question of feeding fuel to the second engine, but having engineers spend double their time on the engines, props and ancillaries plus all the extra time and parts consumed by wobbly wheels and props, de-icing, separate heater and so on. An Annual on the Aztec can easily result in an £8,000 invoice, even if nothing major is found. By the time you have sent the heater off for an overhaul, replaced the hoses and had the de-icing boots patched up, the money spent on the routine part of the maintenance becomes chicken-feed.

Well the "having more to go wrong" argument cuts both ways. Yes, it is expensive, but it also means that you have redundant systems to ensure that you can continue your flight. Losing an alternator or fuel pump is a non-event. You can even take-off and return to base because you are carrying redundancy. And that is worth paying for, in my book.

But the main reason that I am willing to pay more to operate a twin is that I simply don't enjoy flying over inhospitable environments, or in inhospitable conditions, if I am constantly worrying about the effect of an engine, alternator or vacuum pump failure. I know they fail, and my constant worrying about what I am going to do when they do fail just takes all the joy away for me.

When I can no longer afford a twin, I shall probably revert to fun singles. I shall enjoy flying by day over farmland.

But so long as I have a mission profile which means long trips over water, ice and mountains, at night and in bad weather, it will always be a twin for me.

**Timothy Nathan has been flying for 36 years. He holds a CAA ATPL and his 4,000 hour experience is approximately evenly split between executive jets, MEPs and SEPs. He is a member of the AOPA Members Working Group, and Web Editor for PPL/IR Europe* ■