

STAY IN

CONTROL



TAKE-OFF AND LANDING

Most take-offs and landings are uneventful, but occasionally the unexpected occurs so preparation for eventualities keeps the correct actions fresh in the mind.

Loss of control in flight mostly results from failing to prevent, or recover from, stalls or upsets, mostly due to poor energy, attitude and flightpath management. External factors such as turbulence, crosswinds and wind shear can also play a part, especially near the ground on take-off or landing. Decisions and actions need to be made promptly, if not automatically, because if it all starts to go wrong things can happen very quickly.

If, for example, the engine fails at a low height, lowering the nose to maintain flying speed should be automatic, but what about the situation where the aircraft is some way down the runway trying to fly, but not quite reaching take-off speed? The end of the runway, perhaps with an obstacle such as trees, gets closer very quickly and requires a positive and timely 'Go, No-go' decision, allowing room to stop before the end of the runway is reached.

The key to both a successful take-off and a rejected one is preparation. Assuming that all of the proper pre-flight checks have been carried out, are both you and your aircraft fully prepared for what could happen if things don't 'go by the book', bearing in mind the aircraft, runway and weather conditions?

For example, what is the Take-off Run Available (TORA) for that aircraft at that

weight in that particular day's conditions? Will the aircraft be operating on grass or a wet runway or require a specific take-off procedure such as a short-field take-off?

While many pilots do brief themselves for different 'eventualities' on take-off not everyone does, and 'Threat and Error Management (TEM) should be part of the preflight brief — in other words, 'what could go wrong at the various stages of take-off and what am I going to do about it if it does'?

A spoken out loud pre take-off briefing at or near the holding point increases preparedness and the ability to manage the unexpected. For example, 'At what airspeed and at what point on the runway do I expect to lift off and what will I do if I don't?', or 'What's my target airspeed for the initial climb?'... It also prepares a pilot for airfield specifics such as obstacles in the early flight path or noise abatement turns that might require special attention and, of course, preparation for any eventualities — 'What are my back up plans in case of failure after take-off?'

On take-off if the aircraft is heavy with people, baggage and fuel, it can be in a relatively slow, nose-high attitude. These factors combine to provide the least amount of height — and therefore time — available to respond to an eventuality. Successfully managing an engine failure after take-off (EFATO) is dependent on efficient use of the time available and making prompt, correct decisions.

Similarly, preparation for landing — assessing the airfield situation, the weather, other traffic, the wind direction and runway conditions — should be thought through early, certainly before the final turn and approach when concentration should be at its maximum.

If some type of situation develops, don't let it deteriorate. So if the weather is poor, for example, don't try to land at all costs at the planned destination. Always have an exit strategy such as turning back or diverting to another airfield or being prepared to go-around if necessary.

Think, too, to how the wind will affect the circuit and landing — will it drift the aircraft in towards (cramping), or out away from the runway? Both can make circuit adjustments necessary and they are best made earlier rather than later, especially when it comes to the crucial base-to-final turn.

Crosswind landings obviously require the appropriate control skills, but thinking early on how a crosswind might affect both the final approach, touchdown and roll-out, makes the chances of a good, uneventful landing much higher.

Loss of control accidents are, perhaps, most likely in the final turn, approach and landing. They can be avoided to a large extent by establishing a stabilised approach with a constant angle glide path towards a reference landing point so that only small pitch, heading and power adjustments are necessary. Flying too high or too fast will result in an overshoot, while flying too low or too slow will lead to an undershoot.

If the approach isn't stabilised, go around — there's no shame in doing so and

that can save the day rather than trying to retrieve a poor situation while getting closer and closer to the ground. As with take-off failures, anticipate the possibility of a go-around by mentally running through the actions for it when preparing for the landing. Practising a go-around from time to time is also a good practice.

Critically on the final turn, the wing-load factors will almost certainly increase, raising the speed at which the critical angle of attack is reached and allowing an aircraft to stall on an unwary pilot. So think angle of attack when reading the speed: in a turn, the same speed does not provide the same margin from the stall as in level flight. To avoid stalling, reduce the angle of attack below the critical angle and, or, increase power to increase speed above the stall speed to keep the aircraft flying.

It's worth noting in turns that 'nose on the horizon' doesn't necessarily mean the correct angle of attack — for example, a descending turn with decreasing airspeed will lead to a high angle of attack but the nose of the aircraft might not get above the horizon — a situation that could arise if the runway centreline was missed and a steep turn is initiated to get realigned.

While most take-offs and landings are uneventful, if something unexpected does happen, failure to react or recover quickly will likely induce acute stress. After the initial 'startle and surprise', stress can quickly develop, downgrading both manual and mental performance, so being prepared for the 'what-ifs' can help to reduce that effect.

Essentially, self-briefing potential eventualities for take-off and landing keeps fresh in the mind the necessary actions and responses — both physical and mental — should something unexpected happen, and help to avoid a loss of control.