

SAFETY

Situational awareness: the key to safe flying

by John Teesdale



LET'S talk about the thought process going on in your head throughout every phase of flight.

You've probably just done it without thinking, but let's take it apart, because understanding how it works and what can go wrong will help you to fly more safely.

What is situational awareness?

It's having an accurate understanding of what is happening around you and what is likely to happen in the near future. It has three distinct stages:

- The perception of what is happening (level 1);
- The understanding of what has been perceived (level 2) and...
- The use of what is understood to think ahead (level 3).

Situational awareness is not just a theoretical notion. It is pertinent to most accidents or incidents, it is real, and its absence causes accidents.

Research indicates that human factors are a contributing cause in around 70% of all incidents and accidents. Approximately 85% of incident reports include a mention of loss of situational awareness. Degraded situational awareness can lead to inadequate decision making and mistakes such as loss of control or infringements.

We don't just use situational awareness, or SA as I'll call it from here on in, when flying.

Just think about walking along the street, cycling or driving. In any of these situations, we are constantly assessing our position, speed, what is around us, what threats are against us and what to do next. If our SA breaks down, we trip on a kerb, walk into a lamp post, cycle through a red light, get nicked for speeding or become lost!

SA in aviation is about not getting so



Situational awareness at its finest

focused on your own tasks that you don't see the big picture, or being so unfocused on anything that you don't see any picture. Lacking SA is rather like being short-sighted.

A real problem area is the lack of SA when joining the circuit, where a pilot gets entirely focused on cockpit tasks and their impending landing so that they fail to relate to other aircraft, cannot place them from radio calls and become a danger to everyone.

Hopefully, you read Rob Grimwood's excellent article on going around in the last issue, in which he talked about being aware of the conditions and threats such as crosswinds, gusts, turbulence or rotor from nearby trees or buildings.

Being aware of the runway length, your aircraft's performance, height, airspeed, lateral position and flap and trim configurations are all part of situational awareness.

Maintaining SA

What can we do to ensure our SA remains effective when we are flying? Checklists and drills are very useful tools. They help you to be aware of your position, aircraft state, configuration etc, which are all part of SA. But there is more you can do; it's a matter of using the right thought process:

Monitor: Humans have limits to how much we can see and hear at the same time. Be aware of what you need, and ignore everything else.

Evaluate: Evaluate the status of the plane/path/passenger, comprehending what you see, feel and hear; make an assessment of the status of each. This gives you SA for the current state.

Anticipate: Stay ahead of the aircraft; project what is going to happen later.

Consider contingencies: Sometimes things happen that cannot be





Dedicated



You may not be doing this, but you still need to be aware of what's around you

- ▷ anticipated. Consider a change of plan
 - possibly a diversion around weather
 - or go around!

Losing SA and how to deal with it

Many factors can cause a loss of situational awareness. Errors can occur at each level of the process previously described:

Level 1: perception

It's very easy to miss important data if you are distracted or overloaded, eg by a chaty passenger or busy ATC. Don't be afraid to ask your excited passenger to stay quiet when you need to concentrate.

Equally, if you start to daydream and fail to look out and scan regularly, you will also miss things. Try to look out and scan twice a minute during the cruise. When

approaching an airfield, use both your eyes and the radio to build up a 3D picture of where everyone is, then you can slot into the pattern without being a danger to everyone else. On final approach, constantly cycle through the checks: glideslope, alignment, airspeed.

Be aware that visual illusions, such as approaching a wide, long runway when you are used to a narrow short one (or vice versa), or approaching a sloping runway, can cause you to misinterpret what you see.

Level 2: understanding

A classic pitfall here is called confirmation bias. This is where you make things fit your expectation. An easy example is when navigating, you make a feature fit because it should be there. This has caused more than one aircraft to land at the wrong airfield altogether.

It's also possible to simply misinterpret the data that is staring you in the face. A classic example is the windsock. I can remember being fatigued after a long flight, misinterpreting the windsock and landing downwind. I'm sure I'm not the only one.

In the approach and landing phase, pilots may fail to recognise an uncommon or deteriorating situation. There are many reasons for this:

The visual scene is ambiguous –

runway illusions, poor weather, not scanning instruments;

Unaware of runway conditions –

landing risks wrongly assessed or underestimated;

Warning signs ignored – complacency, bad habit, lack of knowledge or experience;

Lack of time – time available underestimated, rushed decision, "press-on-itis".

In the accompanying table, we can see how correctly identifying a good or bad approach and taking the correct action will result in a safe outcome.

Conversely, failure to recognise and proceeding with an uncommon or badly flown approach will result in a hazardous situation. Failure to recognise a good approach will only result in an unnecessary go around.

Level 3: thinking ahead

Again, there is a classic pitfall here called continuation bias, more commonly known as "press-on-itis".

		What we think the situation is	
		Common (good)	Uncommon (bad)
The actual situation	Uncommon (bad)	<p>Failure to recognise the situation</p> <p>HAZARDOUS ERROR</p> <p>Land when you should not</p>	<p>Recognise uncommon situation</p> <p>SUCCESS</p> <p>Go around when you should</p>
	Common (good)	<p>Recognise a common situation</p> <p>SUCCESS</p> <p>Land when you should</p>	<p>Failure to recognise the situation</p> <p>CONSERVATIVE ERROR</p> <p>Go around without need</p>

Situational awareness table



This is a tendency to carry on even though all the information to hand calls for a change of plan, and is an extremely dangerous and potentially lethal trap to fall into.

It can be caused by lack of experience, denial or bloody-mindedness. Continuing a flight into IMC is the most common situation, inevitably resulting in loss of control or controlled flight into terrain. You must resist the temptation to press on regardless.

The other common situation is landing, where despite being thrown about all over the place and feeling that you are losing control, you push on with your approach to the inevitable crash.

I make no apology for repeating Rob Grimwood's excellent advice: when on approach, think about it as "on approach to go around" unless everything is perfect, in which case you can land.

I would like to add a little caveat, though. I have seen pilots go around more than 10 times.

What is wrong with that, you ask? Well, you may have heard the definition of madness as repeating an experiment in



Continuation bias is more commonly known as press-on-itis, and is potentially lethal

the same conditions and expecting a different result. So if you've had to go around six times, something should be telling you to try a different runway or go to another aerodrome.

In brief

Situational awareness is essential for flight safety, and its influence and impact are pervasive.

Situational awareness is gained by using the senses to scan the environment and compare the results with mental models.

Inattention, distraction and high workload threaten situational awareness.

Safe flying!

- For reference: skybrary.aero/index.php/Situational_Awareness

AGM

All for one, and one for all

The BMAA is every single one of us, says Tim Burrow after the AGM

IT'S your BMAA; where would you like us to be in five years?

That was the official response before the AGM to a member's request for further information about how the BMAA sets out its strategy, measures its goals and decides on a vision for the future.

It's not the first time I've seen or heard this come back in its various guises such as: "The members are the BMAA" or: "It's your association; you tell us".

But I think on this particular occasion, with the AGM landing on the busiest and last full shopping weekend before Christmas in a very cold community hall on the outskirts of Deddington and the news filtering through that we wouldn't have a CEO or treasurer present, a motion to make changes to the Articles of Association and Rules seemed to appear under the cover of darkness.

It was no surprise, then, that dialogue in various forms such as Facebook, the forum and emails started to heat up. I for one, while always planning to attend, certainly had an extra strand of vigour to my reason for being there.

I travelled down that morning with a raft of questions and two proxy votes from similar-minded pilots back at St Michael's.

As I grabbed some breakfast in a small cafe in Deddington, two other chaps sitting in the corner asked if I was there to attend the meeting. I guess they saw the anxious look in my eye as I was preparing mentally for battle.

They too had travelled a good distance, from south Wales, and it was apparent they had a clear agenda of points they wanted to raise and get answers to, most of which I think we tended to agree on, as we seemed to share very similar views.



Tim Burrow

When we arrived for the meeting, it was clear we would not be quorate, with about 20 members in attendance plus staff and council members, all of whom are BMAA members too.

Rob Hughes, the BMAA Chairman and stand-in for CEO Geoff Weighell, who normally hosts the AGM but unfortunately was away on extended sick leave, opened the meeting to explain we would have to adjourn for 30 minutes before restarting again, but this time only requiring three members present to make the meeting valid.

He suggested that the 30 minutes could be used to have an open debate between all present, giving everyone a chance to ask questions, discuss issues and have a say while a good proportion of the council and staff were there to listen.

Owain Johns accepted an offer from the floor to expand on his letter previously submitted for inclusion in the meeting under Any Other Business. ▶