



# Why your brain shuts down

Club member **Richard Mornington Sanford** has been harping on about safety all his working life, and we've given him a regular slot to spread his message



“So, you have made the decision to participate in an activity that is one, if not **the** most dangerous activity that you will ever do”.

Riding a motorbike comes close. “It's very easy to kill yourself and your passengers and there is a good chance that you will!”

So how can we reduce the risk of this 'dangerous activity'?

Well, given the fact that a very high percentage of accidents could have been prevented prior to take-off we must look at the pilot and, in the case of this harp, some (but not all) of the human factors involved.

## Investment:

The amount of investment, not just monetary but time, effort, peers, friends etc. that the pilot has made

to get to the point of being able to fly themselves and their friends is considerable. One has to understand that human nature is such that we are averse to giving up on our investments.

Therefore, when they have the opportunity to fly it tends to colour their judgment, resulting in the tendency of the pilot to look for reasons to do so, rather than reasons not to. So maybe the pilot should be looking more from the perspective of finding the reason **'not to fly'**

## Risk:

There are two elements to risk:

● Risk Perception – the recognition of the risk inherent in a situation

● Risk Tolerance – the amount of risk a person is willing to accept in the pursuit of some goal

One of the main contributing causes of exposure to inflight hazards and accidents is risk **misperception** and not high risk tolerance.

Without knowing what the real risk is, then a pilot is not able to properly evaluate different courses of action or outcomes.

However, one of the pilot's human factor problems is that we generally tend to be an optimistic bunch when it comes to our abilities, which again tends to colour our judgment and further contribute to a misperception of risk.

One area of risk that I find is very rarely considered by the pilot is the human reaction to extremely stressful events.

A certain level of stress sharpens the mind and is beneficial to the pilot, but too much stress will have a detrimental effect.

Pilots have to understand that when they are exposed to an unplanned/un-trained-for event (an overly stressful event), their brains, and in particular the Limbic System region, will perceive this as a threat and trigger the release of steroid hormones, including adrenalin and the primary stress hormone cortisol, which marshals systems throughout the body to deal with the threat, increasing heart rate, blood pressure and blood flow etc.

Neurotransmitters are also released that will suppress (shut down) activity in areas at the front of the brain concerned with concentration, rational thought, short term memory and inhibition, thereby hindering the ability of the person to handle complex social or

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**Right: risk misperception kills, rather than high risk tolerance**

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intellectual tasks and behaviours.

These mental events were critical in primitive times to allow a person to react quickly to the threat; 'the fight or flight response'.

The pilot has no control over these mental events!

That's fine if your threat is a sabre-toothed tiger, but not so good for the pilot trying to deal with an in-flight stressful event!

The pilot will find that as the stress reaction to the threat evolves, even simple tasks that he or she could easily carry out before the threat/stress occurred, become difficult if not impossible to perform. Situational awareness, verbal functioning, mental capacity, auditory functions etc. will be reduced and they will swiftly become overwhelmed, leading to the loss of control of the situation.

This primitive mental activity of the brain does not care how good a pilot you think you are. However, a well-trained pilot, who has planned and pre-flighted well, who knows the critical flight conditions relating to the type being flown, who has good knowledge and current training in the identification and recovery of the incipient stages of the critical flight conditions, who has currency on emergency procedures and their execution to a safe conclusion, who has read and understands manufacturers' safety notices, who is willing to attend safety courses or briefings, who has a good understanding of the type of fatal accidents and the frequent factors involved in those accidents, who is willing to give up his or her investment and not conduct the flight if any reason not to fly has



been found, or will land, divert or return if in-flight conditions deteriorate, can delay the onset of excessive stress by giving retaining the spare capacity required to deal with unforeseen events, or avoid them in the first place.

A major risk consideration for the pilot must be the fact that if there are passengers involved, the passengers have quite literally put their lives in the pilot's hands, and this consideration has to be extended to the passenger's families.

The pilot must understand that whereas they might be willing to take a risk and fly, any passengers involved may not – so get them involved, give them a choice. Your passengers should be made aware of any concerns you may have prior to the flight and during the flight.

The pilot's decisions involving the suitability of continued flight must be made based on the risk to the lives of the passengers, and not the willingness of the pilot to accept the risk.

Any passengers should be

comprehensively briefed with the caveat that you should not swamp them with too much detail, leading to a retention problem.

It should be made clear that they should inform you at any time during the flight if they have any concerns relating to their perception of the safety of the flight; however, the pilot must not allow the passengers to become a distraction at points of high workload. Know where the pilot intercom isolation switch is!

Only proper, detailed and careful planning will enable the pilot to evaluate whether the risk is acceptable or not, and to properly evaluate different courses of action or outcomes, i.e. backup plans.

'The pilot's future flights are dependent on the good planning for the current one!'

'If in doubt, there should be no doubt about the decision - do not fly'

'Keep your RPM in the green, and I will keep harping on'

*Richard*