



SAFETY

Under pressure

No, no, not the Queen song: what happens when we get stressed in the air, says **Chloe Eriksen**

I READ a lot of accident reports, and one of the most common themes that comes out of these reports, not just the microlight ones, is the human factor.

While our machines do sometime fail, it's often our reaction to the failure or our decision-making in an emergency – or even a non-emergency situation – that can lead to an accident.

I've written before about how to err is to be human, but I believe that it's essential to understand the limits and behaviours of the human brain so that we can reduce those errors.

It's for that reason that I've chosen to focus a little on stress, and how we can manage it in the cockpit. Stress management is a vital skill for pilots, as we must learn how to deal with pressure and stop it from overwhelming or disrupting us.

Stress

Stress is the body's response to perceived threats or challenges, which can impair cognitive functions and decision-making abilities. In aviation, the causes of stress can be environmental, physiological, psychological or operational.

The demands on a pilot can be many, and they vary throughout any given flight. Unsurprisingly, workload peaks during the busy takeoff and landing periods, and reduces during any cruise legs.

As pilots, we need to be able to efficiently manage this workload while also keeping something in the tank for any unforeseen eventualities. If we don't manage this effectively, it can lead to an overload, and ultimately stress. The cause of this stress is known as a stressor.

Flying is full of demands and pressures which are in turn potential stressors, and while a little bit of stress can be good, too much can be very bad.

Here's the *Air Pilots Manual's* official definition: "Stress is the adverse effect on the mind and body of an overload of pressure" (*Air Pilots Manual 6 – Human Performance & Operational Procedures*).

A small amount of pressure can actually improve our performance by raising our arousal level into the optimum area, but too much can tip us over into overload, and conversely reduce our performance.

In the graph, you can see the relationship between the two and the optimum area in the centre. This is where we need to aim for.

We all have different tolerances to pressures, which are determined by our capacity, experience and aptitude.

When flying, we need to keep any potential stress in check to allow us to be able to make good decisions.

The demands placed on pilots are multiple, and include maintaining airspeed, navigation, making and receiving radio calls, and so on.

Any one of these demands can become a stressor, and the cumulative effect of these demands all at once can also lead to stress.

There are various ways in which we can limit the effect of stressors on ourselves in the air, and most of them start on the ground.

Physical and mental preparation

In order to give ourselves the best possible chance of reducing stressors, the set-up needs to be right.

We perform better when we are well rested and feeling good. We all recognise that when we feel tired, everything feels that little bit harder.

A wise pilot once told me that in terms of performance, extreme tiredness is akin to being drunk, so it's never a good idea to have a late night before a flight the next day.

This is why commercial aviation places restrictions and limits on crew duty hours and ensures that there is sufficient time to rest in between trips. It's dangerous to fly when you're tired.

We also need to be physically well and happy. Being unwell can make you feel uncomfortable and distracted. Flying requires peak physical and mental performance, so anything other than top condition means you shouldn't really fly.

In the military we often used the term "mission bubble". It was used to describe that time before a mission that should be protected from potential distractions. No one should interfere with this time or ask you to do anything other than the task at hand. This allowed the commander and crew to focus en-



Now just remain calm, old chap, and take a moment to think about this

tirely on the job, facilitate thorough preparation and reduce the likelihood of any errors or omissions.

This time was protected and understood by all. Flying is great fun, but it can also be hazardous and potentially dangerous, so it deserves respect.

Time and careful consideration should always be taken before committing aviation; rushing into any flight, no matter how urgent the task, can lead to disaster.

Experience also plays a part. During my helicopter training, I vividly recall working so hard to try to hover that I honestly couldn't ever imagine achieving it, but with time it became second nature and something I would eventually do without even thinking.

During those early days, I had little or no spare capacity and would have struggled to spell my own name while gripping the controls with an iron fist – unnecessarily, I might add.

Experience increases capacity and this capacity in turn increases our ability to cope with any demands and stressors over and above the normal workload in flight.

Emergencies

An aircraft emergency can be a high-stress situation. The cumulative effect of multiple demands with the added pressure of time and the high stakes involved with an emergency can quickly and easily lead to overload.

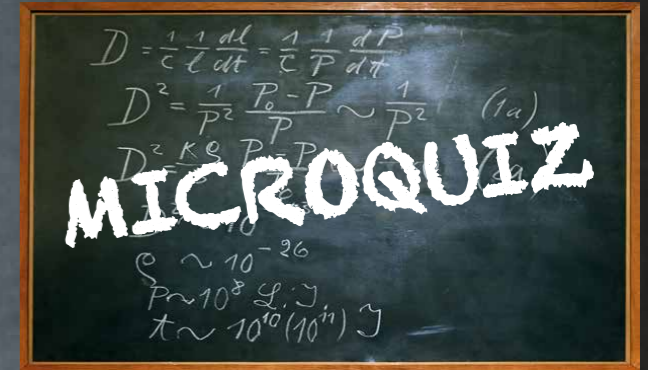
No matter how experienced the pilot, too much stimulus and too many competing important demands can easily overwhelm.

In order to mitigate the effect of overwhelm, one option is to remove the need to make decisions by following procedures. This alleviates the need for rapid decision-making under pressure, which can be very difficult.

Of course, it's not always this simple, and each emergency situation is different, but reference to a prescribed set of actions or guidelines can remove some pressure. If you're unsure of what you would do in any given emergency, talk it through with an instructor or play through the scenario in your head while safely on the ground.

One piece of advice which I always held on to if I encountered an aircraft emergency was to take a moment.

In aviation, there are a couple of situations where you need to act fast, but most of the time, taking a second or two to assess the



- How should a pilot describe traffic that is 30° to the right of the nose and above their aircraft using the clock code?
 - one o'clock high
 - 12 o'clock high
 - two o'clock high level
- Which of the following will always result in a decreased rate of climb?
 - an increase in indicated airspeed
 - a reduction in engine power
 - a headwind
- Which colour are taxiway edge lights?
 - green
 - white
 - blue
- As an aircraft accelerates in level flight, parasite drag...
 - decreases
 - increases
 - remains constant
- The lift force acts ... drag
 - in the opposite direction to
 - perpendicular to
 - parallel to

MF's quizmaster Lawrence Bell is the developer of QuizAero, the online groundschool for microlight student pilots, quizaero.co.uk.

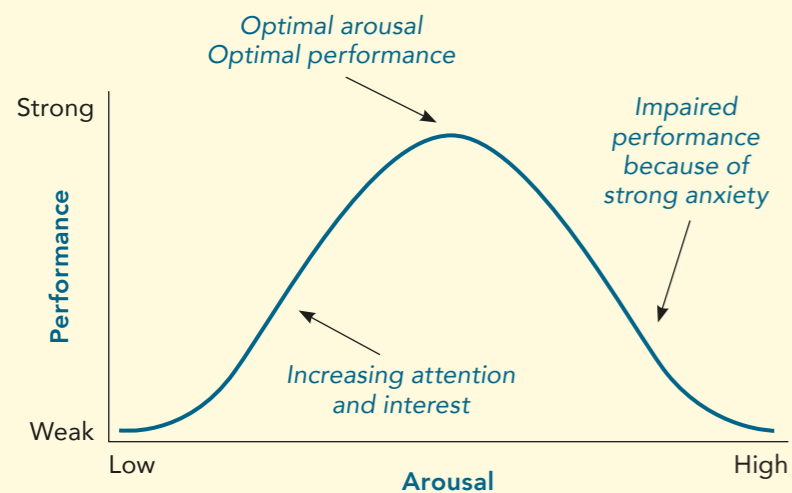
Answers overleaf



GASCo, the General Aviation Safety Council, is a charity whose members are aviation organisations. Its aim is to make aviation safer through education. It presents the CAA safety evenings, runs seminars and provides safety information through its magazine and website, gasco.org.uk.



CHIRP, the Confidential Human Incident Reporting Programme, reviews and analyses reports from pilots, then publishes them so others can learn. Get the app at chirp.co.uk.



The bit in the middle is where we want to be



SAFETY

▷ situation and calmly plan your next move could potentially stop a situation getting worse. Time pressure can be the cruellest and often is the hardest to overcome.

Build resilience

Embracing a mindset of continuous improvement fosters resilience. We should all seek feedback, set personal goals and strive to enhance our skills and knowledge. Being proactive in learning from mistakes and celebrating successes builds a strong foundation for managing stress.

Stress and pressure don't lead to good decisions. I'm sure that we can all recognise a time where we experienced mental overload in everyday life. You can feel paralysed by indecision, unable to think clearly, or end up panicking.

We all have different levels of tolerance for different situations, so it can be hard to predict, but no one is invincible, and everyone will reach their limit at some point. The more we learn, the better prepared we can be for these inevitable situations.

Often, after the event we recall the straw that broke the camel's back. It wasn't one stressor that caused the accident, but the accumulation of lots of different contributory factors which ultimately led to the failure. It's our job to reduce the likelihood of stress in the cockpit, and this can be achieved through thorough preparation and greater understanding of the human brain.

I've barely touched the tip of the iceberg on this topic here, so I encourage you all to carry out further research and reading. All questions and feedback are welcome to me at safety@bmaa.org. □

MICROQUIZ ANSWERS

- 1a one o'clock high
- 2b a reduction in engine power
- 3c blue
- 4b increases
- 5b perpendicular to

OBITUARY

The legend of Northrepps

Kevin Smith pays tribute to Chris Gurney

CHRIS, who died peacefully on 26 June, was a larger-than-life Norfolk character who, despite being in a wheelchair, founded and ran Northrepps Aerodrome, Cromer for over 40 years.

Always passionate about flying, he knew pilots from all over the world, many of whom flew in to especially to see him.

In 1981, he'd been very badly injured when a Tiger Moth flown by the then Norfolk Euro MP, Paul Howell, crashed in Norfolk.

Chris, who had been a passenger in the front seat, barely survived, receiving multiple fractures and a broken back.

In intensive care in Norwich Hospital, he met the love of his life, Julie Millett, who nursed and later married him, and although he'd been told he only had three to five years to live, her love kept him alive for a further 43 years. Her care and devotion were literally life-preserving.

Chris had grown up on the family farm in Northrepps, son of Major Gurney, and gone to school in Wiltshire and Harrow.

He studied farming at Cirencester Agricultural College, and also had a short time in the Army.

Always keen on flying from when he was a young child, he got his pilot's licence early and went on to fly a lot in America, which he loved, getting his dual engine ticket there.

Even after the crash, Chris used to do some flying, and always made light that it was only "the last three feet that hurt".

He was always full of the joy of life and stoic about the cards that fate had dealt him and his injuries, which left him in a wheelchair.

He taught the Air Cadets for many years, and helped run Cromer Carnival. Many will miss his daily local weather forecasts, as he had trained in meteorology.

He will be remembered for his laughter and kindness. He leaves a loving wife and a lot of happiness.

His funeral will be held at St Mary's Church, Northrepps, at 2pm on Friday 2 August. □



New Farm goes global

Well, almost. **Courtney Chambers** on a hugely successful Back to the Future SSDR & Sub-70kg Rally. Photos by **Justin Parsons**



SACKVILLE airfield in Bedfordshire was the venue to host this year's rally, following the sad closure of New Farm, as reported previously in *MF*.

The weather couldn't have been more perfect, with blue skies and the sun shining on the Saturday morning as a number of hot air balloons launched at around 6am, watched by the 20 or so campers who had arrived on the Friday evening.

The New Farm team (quickly dubbed "New Farm airfield on tour") arrived to set up ahead of a busy day of aircraft arrivals, and to keep both those arriving by air or by road fed and watered throughout the day.

The level of amazing support received was incredible to behold, with aircraft of all types joining us from all corners of the UK.

While it was promoted as the SSDR & Sub-70kg Rally, we opened up the doors to aircraft of all types, as we had always done at New Farm to encourage pilots of all types to mix in a fun and friendly way over our mutual love of flying.

The incredible range of aircraft included everything from sub-70s through to a replica Spitfire and Messerschmitt, motorgliders, stunning vintage Luscombes, Cubs, a Baby Great Lakes and Jodels, mixing in with more modern GA Cessnas and a whole raft of modern microlights.

In all, we welcomed around 73 visiting aircraft as well as a further 10 home-based aircraft which were brought out of the hangars to join in the incredible atmosphere that is really only ever seen in grassroots flying events. ▷