

# WHY IT IS GOOD TO THINK AHEAD

Continuing a new series from the BGA safety team, with a focus on some of the human factors that can lead to a stall/spin accident

**W**E'VE lost 35 pilots through inadvertent stall/spin accidents to gliders in the past 46 years, and another 11 through loss of control of tugs and motor-gliders. Our files record over 200 further accidents in which stalling or spinning led to serious injury or damage – and all these figures exclude winch launch accidents. Most of them happened to experienced, competent pilots, who showed no sign of lacking spin recovery skills; and a lot occurred when field landing [1] or trying to stretch the glide back to the airfield [2].

There are many good things we can do to reduce the risk of a stall/spin accident. We can maintain familiarity with spins and their recovery [3]; ensure that the C of G is within limits to avoid longitudinal instability;



position the ASI where it's easily visible, and orient it to be 'needle up' at manoeuvring speed; practise handling in the landing configuration, especially in flapped gliders; and fit a stall warning device. But these aren't the topic of this article – because a feature of over 80 per cent of the major stall/spin accidents was high pilot workload, stress or potential distraction: 'human factors' that involve the soft, squishy bit between the ears.

A senior pilot told of a cross-country flight when he had to choose between turning home early and pressing on into obviously poor conditions around the final turning point. Electing to complete the task, he thought about how the poorer conditions and greater workload and stress would affect his flying. "I know my speed control deteriorates," he said, "So I deliberately added a bit to my thermalling and manoeuvring speeds." It's a good example of forethought, self-knowledge and preparation. "But what worried me in hindsight," he continued, "was that this was the first time I'd thought about things this way – and I'd already been CFI here for 15 years!"

Psychologists refer to the stages of this process as perceive, comprehend and project; the RAF labels them What? So what? Now what? It's how we learn by reflecting upon past events, but it can also be applied ahead of time as 'threat and error management'.

## 1 Spot stressful situations ahead

Workload and worry can cause as much stress as physical challenges. Difficult soaring, turbulence or rotor, poor visibility, getting low or a marginal glide, having to navigate tricky airspace or deal with ATC will all use up our mental capacity – as will hunger, dehydration, a full bladder, or concern



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about getting home in time. Some situations might be foreseeable at the flight planning stage; others might be flagged en route by deteriorating conditions, making a decision to press on, needing to start the engine or land out, or encountering circuit traffic or landing area obstructions.

## 2 Identify how stress could affect you

The pilot above isn't alone in finding his speed control affected by workload: with our attention demanded by other activities, we've less to dedicate to accurate flying. It's also thought that, just as drivers have been found to slow down unthinkingly when making a phone call, pilots might subconsciously reduce speed to compensate for increased workload [4]. Unfortunately, the tactic is less helpful in the air.

However superhuman our abilities as red-blooded glider pilots, there is for all of us a level of stress or workload that will affect our flying, and it's helpful to know how we each respond to it [5]. Mental and visual attention, physical sensitivity and coordination could all be affected. For example, you might find that your speed control and handling precision deteriorate; that you're more ham-fisted, tense on the controls or less sensitive to what the glider is doing; that you find the glide computer more frustrating to program and your analytical ability decreased; or that concentrating upon the landing area reduces your awareness of speed, balance and attitude. You might find decision-making more difficult, or the inevitable harder to accept [6].

It's also useful to know whether your glider is particularly sensitive to mishandling

or misconfiguration, and whether this changes with flaps or ballast for landing, or when the engine is extended.

## 3 Take mitigating action

If we know that we're approaching a stressful situation, and we know how the stress could affect us, then we can do something about it – ideally before we reach the situation itself.

Firstly, we can reduce unnecessary distractions: set the instruments, prepare radio frequencies, check wind direction; stow articles, eat or drink something, take a leak. We might even get ready early for landing by adjusting the seat or pedals, dumping ballast, checking our straps and lowering the undercarriage.

Secondly, we can consciously adapt our flying to make it less susceptible to our reduced performance: decide to fly a bit faster, manoeuvre more gently, or increase our margins in some way.

Thirdly, we can prepare mentally: we should expect a hard time and some tough decisions. We might decide in advance what the criteria for those decisions will be – and give some thought to field landing options.

Finally, we can try to concentrate upon key safety aspects. It's easy to spin from a plausible attitude in an unbalanced turn; and, at low level, geography can deprive us of an accurate horizon, while wind gradients and turbulence can be more marked. Speed and balance therefore require enhanced attention: above all, the first priority is to aviate.

In the airline world, this would be crew resource management – CRM. Its principles still apply even when there's only one of us.

**Tim Freearge and the BGA safety team**

## IF WE KNOW HOW STRESS COULD AFFECT US, WE CAN DO SOMETHING ABOUT IT

■ For more information about some of these aspects of human factors, a good starting point is the CAA's CAP 737 [5].

[1] AAIB Bulletin 4/2010  
<https://tinyurl.com/flyright1915>

[2] AAIB Bulletin 2/2013  
<https://tinyurl.com/flyright1916>

[3] BGA Instructor Manual, sections 1819  
<https://tinyurl.com/flyright1917>

[4] Forced Landings, GASCo Flight Safety, pp59 (Summer 2016)

<https://tinyurl.com/flyright1918>  
[5] CAA, Flight-crew human factors handbook, CAP 737 (2016)

<https://tinyurl.com/flyright1919>  
[6] K Ballantyne, *The Fatal Five*, Flight Safety Australia (2015) <https://tinyurl.com/flyright1920>

■ Clubs can obtain printed copies of Safety Briefings from the BGA Office.



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