RAF Institute of Aviation Medicine

At the forefront of research into spatial disorientation is the RAF Institute of Aviation Medicine at Farnborough. Flight talked to Dr Alan Benson, head of the Behavioral Sciences Division, and Dr Rollin Stott, head of the Vestibular Physiology Section.

Benson says that between 10 and 15 per cent of the United Kingdom's military fixed-wing aviation accidents, and up to 16 per cent of rotary-wing accidents, have spatial disorientation as a contributory cause.

In the United States the Federal Aviation Administration has expressed concern that some 35 per cent of the general-aviation accidents notified have some level of disorientation apparent. “You sometimes have to look beyond what is assumed as the primary cause,” says Benson. “How many accident reports have you read which state that the pilot pressed on in worsening weather? True, some fly into low ground, but a greater number just lose control because they either don’t know how to fly on instruments, or they don’t believe what the instruments are telling them.”

The figures for disorientation accidents have remained fairly constant for the last 25 years or so, but, as mechanical faults become rarer, the focus on human factors is sharpening. As new technology comes along, new problems arise. Higher levels of instantaneous manoeuvrability bring increased likelihood of vestibular induced disorientation. “In short, there is no magic bullet or panacea to cure it, although there are some prophylactic measures that can be taken,” says Benson.

“Education into the causes and effects helps,” says Stott, “as does proper attention to good cockpit ergonomics—avoidance of the need for large head movements, for instance. Individual fitness levels, apart from ear infections, are not so much of a factor, except for alcohol intake and self-medication, both of which are dangerous.”

Is the 12 hours bottle-to-throttle rule adequate? “Only if you have taken a moderate amount of alcohol. The UK legal limit for car driving is 80mg/ml. Depending on your physical size, that’s about two pints of beer. Your body rids itself of the alcohol at about 10ml/hr, so you need at least 8 hours to overcome the effects of two pints. The 12-hour rule is adequate only if you do not drink beyond a moderate amount.”


Ignore the instruments at your peril