STEADYING THE MIND: MINDFULNESS IN THE NUCLEAR INDUSTRY AND BEYOND

There is evidence from military settings and other high-pressure, safety-critical environments that mindfulness helps to reduce stress and enhance attention. In this article, **Martin Summerfield** explores mindfulness in the nuclear sector.

KEY POINTS

- **Mindfulness is effective in reducing stress, anxiety and burnout.**
- **Mindfulness provides such benefits without compromising alertness and awareness and understanding of the operational situation.**
- **Mindfulness could potentially improve the mental health of air traffic controllers and pilots, and also enhance flight safety.**

Thoughts, whether positive or negative, are normal events in our mind, and can greatly affect our wellbeing. Mindfulness is simply about being aware of experiences in the present moment. It includes the practice of meditation (i.e., time purposefully put aside to 'train' attention) but also encompasses informal moments of noticing internal events such as thoughts and feelings, and also what's going on around you. Taking the time to notice how you are sitting, at your ATC workstation or in a cockpit seat, is a good example of being 'mindful'.

In much the same way as doing push-ups or running laps benefits our bodies, mindfulness training has been shown to have long-term benefits for our minds. The benefits build up over time, especially if practised daily. Instead of working up a sweat, you take time to work on your attention, which may begin with focussing on the breath.

Practising daily helps you in everyday life to create space between stressful events and your reactions, to be more considered and less immediately caught up in events. Potentially stressful events will inevitably occur in our work life and home life on a day-to-day basis. What's important is how we set ourselves up for the day, and how we relate to those stressors.

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The human mind has gained great evolutionary advantage from being able to plan ahead and to review and reflect. However, these capabilities can become problematic when we are under a significant amount of stress. Reflection can quickly turn into regret, whilst planning can turn into worrying. Neuroscientist Amishi Jha has explored the way stress affects attention. Her research involving the US Army (Jha, 2017) found that mindfulness is effective at protecting attention and working or short-term memory at times of heightened stress.

To reduce the effects of stress, first we need to be able to see what is happening for us at a given time. Once we have established this self-awareness, we can start to make more informed decisions. For an ATCO, this might mean simply taking a few breaths to 'reset'. Or it might be that at the end of a particularly challenging schedule, you prioritise looking after your work-life balance. You might become more conscious that during time for relaxation, your attention is being drawn back into thoughts of work. If we are aware of this, we are better able to do something about it.

The Nuclear Experience

Mindfulness has recently been used within the UK nuclear industry. Within EDF Heysham 1 and 2 nuclear power plants, 100 staff (around 10% of the workforce), have undertaken a

mindfulness course. These staff come from a range of backgrounds, with the majority describing themselves as engineers of various descriptions. The nearest equivalents to the roles of air traffic controller and professional pilot are probably the operation engineer and their associated supervisors and shift managers, who operate the reactor control rooms. Within each power plant there are approximately 500 staff, of whom 45 operate the control room. These staff work on rotating shift patterns to cover the monitoring and operation of these control rooms. The skill sets include the capacity to maintain vigilance of incoming reactor data, detailed knowledge of reactor systems and operating procedures, the ability to respond effectively in normal and abnormal situations, and the ability to communicate clearly and work well as a team.

There are times of lower-level baseline workload and times of increased pressure. Planned 'outages', when reactors are shut down for routine maintenance, greatly increase the workload for control room staff. These biannual events involve lengthy spells of increased shift work over a number of months. 'Unplanned outages,' which are events that trigger an unexpected shutdown, create the most pressurised situations.

The Fukushima Daiichi accident, which followed the earthquake-induced tsunami in 2011, highlighted the vital role of control room teams in responding to situations as they unfold, and to work from detailed knowledge of the system rather than rules alone, similar to QF32 (see HindSight 29). The control room teams at Heysham spend a significant number of days each year in the control room simulator, where they build skills in order to be able to recognise each situation as it unfolds, and to adapt and devise appropriate response strategies. Fukushima further highlighted the need for staff to be able to be flexible, in order to account for key staff being unavailable. It also highlighted the need for resilience during unprecedented events, in order to be able to prolong high-level performance.

Control room staff and instructors who have undertaken the mindfulness course, have found it invaluable in terms of recognising and regulating both their own stress levels and those of colleagues around them. Self-reported levels of wellbeing and attention have risen over the duration of the course. There are a number of studies seeing similar results within the medical profession, where mindfulness has been shown to reduce stress and limit burnout for staff working in Intensive Care Units (Duchemin et al., 2015).

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Mindfulness in Aviation?

So what about aviation? The value of mindfulness is increasingly recognised in the military due to the growing evidence base. In the New Zealand Air Force News (2018), psychologist Flight Lieutenant Carsten Grimm stated that "*militaries all over the world are adopting it because of the research pedigree that's emerging*".

Norwegian F-16 pilots and support personnel undertook mindfulness training, reporting reduced levels of anxiety and increased ability to regulate attention and emotions (Meland, 2015). In a study looking at military helicopter pilots, Meland (2016) highlighted the capacity for mindfulness to reduce anxiety and arousal without compromising alertness and situational awareness. This ability to remain both calm and alert is potentially of enormous value to both pilots and ATCOs. Daily practice of mindfulness supports restful alertness and reduces unhelpful 'reactivity' in response to stressful events.

Starting out with Mindfulness

There are clear advantages to using mindfulness to regulate stress:

- It is a drug-free treatment.
- There is a good evidence base to support the benefits for mental wellbeing.
- It can enhance awareness and protect this vital capacity at times of stress.
- It can be practised almost anywhere, at any time.
- It's accessible. There are readily available apps, CDs, books and courses.

For individuals, apps such as 'Headspace' or '10% happier' are good places to start. The book and CD *Finding Peace in a Frantic World* by Professor Mark Williams is highly recommended. Going further, attending a course, such as mindfulness based stress reduction (MBSR), led by a qualified teacher, has great merit. However, just like physical exercise, it requires ongoing commitment.

The key to successfully introducing mindfulness into an organisation, is to make any intervention specific to the work context. For staff engagement, it's important for the content and delivery to be relevant to the specific work environment. A successful mindfulness programme at two of EDF's nuclear reactor sites involved more of the neuroscientific background to mindfulness than might be used with other workplaces. There was also a focus on the application of mindfulness in the safety-critical situations faced by staff.

There is also great value in seeing this approach as a way of supporting the 'whole' person, which was the approach taken by EDF Energy. What happens outside of work inevitably impacts our performance and safety within work, however much we (or our employer) may wish to ignore this reality. We are human, after all.

Martin Summerfield trained to deliver mindfulness with Bangor University and is an accredited with the British Association of Mindfulness Based Approaches. Martin has worked with several large organisations and individuals and has a particular interest in the application of mindfulness in safety-critical industries. He worked with EDF Energy and their staff to deliver mindfulness interventions at two nuclear power plants between 2017-2020.

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