

Mindfulness – a safer way forward for towing?

Can we use mindfulness to reduce towing accidents?
Tom Anderson, organisational psychologist and director of Blue Stream Consulting, a company with extensive experience in safety critical industries, argues that serious incidents can be prevented through organisational mindfulness.

The international towing industry is likely to face increasing challenges to safe operations. Not only are there the technological and training challenges associated with ever-more powerful and complicated modern tugs^{1,2}, there is the crucial need for shared risk-awareness between tug master/crew and pilot/ship's captain, to avoid the girting and capsizing incidents that compromise safe and reliable towing operations.

Where does mindfulness fit in?

If we start at the beginning, mindfulness has its roots in Buddhist tradition and Eastern philosophies. The contemporary concept of mindfulness, from a psychologist's perspective, is the ability of an individual to have an 'awareness of the moment'³. A more familiar use of mindfulness is its clinical application in chronic disease management, such as chronic pain, and to help counteract the effects of stress and depression⁴.

The ability of a mindful individual to be 'in the moment' has been noticed in organisations that function in extremely testing environments, such as nuclear power stations and nuclear-powered aircraft carriers. This 'organisational mindfulness' has been studied by Professor Karl Weick, a world leader in organisational behaviour and psychology from Michigan University. He observed that mindful individuals within these organisations, known as high reliability organisations (HROs), have a shared and valued understanding of what is important,

and a high awareness of what is happening around them; this helps in both anticipating potential problems, and effectively managing unexpected events when they occur⁵.

Can organisational mindfulness work for the towing industry?

You don't need to be an elite or exotic nuclear-powered aircraft carrier to strive to be a mindful organisation; organisational mindfulness can work in other diverse safety critical industries, from air traffic control systems and hospital emergency rooms to offshore oil & gas production platforms, and towage/salvage operations.

For example, consider an everyday towing scenario, where actions have been 'rehearsed' numerous times, such as a tug master and crew with cargo vessel under tow. This potentially 'less mindful', automated response works well under normal circumstances, but what happens when things start to go wrong, such as deteriorating weather conditions into dense fog, leading to reduced visibility and disorientation, or a pilot and/or ship's captain who is unfamiliar with a tug's capabilities?

Mindfulness stops us falling into old behavioural traps – old routines won't help if something unexpected happens. However much we carry out routine practice drills, we can still find ourselves in strange territory: such as an incident that we are unable to train for, or rehearse⁶. So, mindfulness is about being in the moment, staying focused as a bad situation starts to unfurl.



▲ Aircraft carrier **USS Enterprise** pulls into home port (Naval Station Norfolk).
Photo courtesy of Wikimedia Commons.

Of course, we are all fallible, and it is hard to stay mindful all the time. Neuropsychology tells us that we dip in and out of our ability to stay focused, and it is easy to slip into autopilot mode. So what do we do? This is where organisational mindfulness comes into play – in other words, a shift in focus from individual mindfulness to the collective mindfulness we see in HROs.

How can organisational mindfulness help the towage industry stay safe?

If we go back to our previous HRO example, personnel on nuclear-powered aircraft carriers manage the simultaneous take-offs and landings of jets laden with munitions, on floating airfields that are only 333m long. These 'supercarriers' are powered by two nuclear reactors, and are manned by up to 6,000 crew – mostly under 21 years of age, one-third of whom rotate every 12 months. Despite these daily challenges in a hostile environment, these vessels manage to stay safe and reliable even when operating at the 'edge of the envelope'⁷. Crews achieve this by using five cognitive processes that enable them to reach a state of mindfulness⁸.

Personnel on nuclear-powered aircraft carriers 'anticipate' things that might go wrong by applying:

1. 'Reluctance to simplify'
 - Not getting locked into thinking that situations are routine and familiar; this is difficult as we all tend to be guided by past experiences;
 - Being aware that every operation (even familiar ones) potentially presents new challenges; HROs are acutely aware that their first error may be their last.
2. 'Focus on failure'
 - Staying aware of the possibility that things can go wrong, and do go wrong, eg sudden power loss, or rapidly deteriorating weather can result in situations that can quickly escalate out of control.
3. 'Sensitivity to operations'
 - Having situational awareness is about being in the moment, while still being aware



◀ **Hornet** launches from flight deck of Nimitz-class supercarrier **USS Harry S Truman**.
Photo courtesy of Wikimedia Commons.

of what is going around you – or having ‘big picture thinking in the moment’, for example, deck crew having their ‘heads on a swivel’ while aircraft are taking off and landing at one-minute intervals.

If things do go wrong, crew members ‘manage’ unexpected events by:

4. ‘Deference to expertise’

- Where all crew members are happy to speak out, and all opinions are valued: deckhands, for instance, are empowered to make important on-the-spot decisions, such as aborting take-offs and landings if debris is found on the deck.

5. ‘Commitment to resilience’

- When the unexpected occurs, confusion often results. HROs are not frozen by unexpected events, and are able to act their way out of trouble when a bad situation develops.

Mindfulness can be seen both as a mindset and a style of managing, but to reach a state of mindfulness takes effort as we are paying more attention to our failures than successes. Essentially, we need to think afresh about

problems previously encountered, and acknowledge that someone else in a lower position may know more than we do⁸.

A collaborative, mindful team – from towing company, tug master/crew, pilot/ship’s captain to port authorities – allows for the building of trust, enhances situational awareness, and decreases response time to near misses, all essential for accident prevention.

References

1. Hensen, H, *Using experience to assess required tug power*. *Port Technology International* 6th September 2012, Edition 27 *Mooring and Berthing*, p95–97. Available at: http://www.porttechnology.org/images/uploads/technical_papers/PT26-03.pdf
2. Hensen, Henk, Ward, R, Livingstone, G, *Where is the practical know how?* *International Tug & OSV* November/December 2013, p67–72.
3. Langer E, *Mindfulness* 1989. Cambridge, MA: Perseus Books.

4. Simpson R, Booth J, Lawrence M, Byrne S, Mair F, Mercier S, *Mindfulness based intervention in multiple sclerosis – a systematic review*. *BMC Neurology* 2014;14(1):15.

5. Weick K E, and Roberts K H, *Collective Mind in Organizations: Heedful Interrelating on Flight Decks*. *Administrative Science Quarterly* 1993;38:3:357–381.

6. Bigley G A and Roberts K H, *The incident command system: high-reliability organizing for complex and volatile environments*. *Academy of Management Journal* 2001;44:1281–1299.

7. Anderson T, Parratt R, *Why High Reliability Organisations for the UK’s nuclear industry*. *Nuclear Connect* April 2012, Edition 9 p39–40. Available at: www.nuclearconnect.co.uk/magazine/back-issues/

8. Weick K E and Sutcliffe K M, *Managing the Unexpected. Resilient performance in an age of uncertainty*. John Wiley & Sons, Second Edition 2007, Chapter 7, p139–160.

The sky’s the limit when safety is at stake

Justine Heeley, managing director of Drew Marine Signal & Safety, which manufactures Comet and Pains Wessex marine distress signals, discusses the importance of pyrotechnic flares to today’s Tug & OSV sector and examines how they contribute to crew safety.

The sight of a flare launched 300 metres into the sky remains one of the most universally known signals indicating distress at sea, with the use of pyrotechnic flares now dating back more than 100 years. For watch crew on commercial vessels, and even for pilots flying thousands of feet overhead, the signal of a red parachute rocket flare burning steadily for 40 seconds, usually followed by a second and third flare, is the internationally recognised distress signal.

The International Maritime Organization (IMO) issues regulations for commercial ships, which includes SOLAS (Safety of Life at Sea) regulations and COLREGS (the International Regulations for Preventing Collisions at Sea).

These standards for shipping specify the requirements for a range of SOLAS-approved pyrotechnics to be carried on board – with the range and quantity varying, depending on the vessel’s size. In addition, the SOLAS/US Coast Guard regulations require that all vessels over 300 gross tons must carry pyrotechnic flares on the bridge as well as inside life rafts.

Pyrotechnic flares are a vital part of the ship’s safety equipment, both for raising the alarm in an emergency and pinpointing the ship’s, or casualty’s, position. Countless lives have been saved through the use of pyrotechnic flares, and it is imperative that anyone venturing out to sea is able to operate them correctly in the event of an emergency.

The major benefit of pyrotechnic flares is

that they work wherever you happen to be in the world. They are also self-contained, hand portable, waterproof and are not reliant on power supplies, batteries or potentially fragile electronics.

A nearby vessel may see your flare and rescue you well before anyone can react to a Mayday call or EPIRB (emergency position-indicating radio beacon) signal. An EPIRB will provide an accurate location, but a flare will precisely pinpoint your position, particularly in bad weather, rough seas and at night. Pyrotechnic flares also act as a wind direction indicator for any approaching rescue craft, vessel, spotter plane or helicopter to safely retrieve casualties.

“Having pyrotechnics on board is crucial, as they make the danger clear to the closest point of human contact – whether that is another vessel, walkers on cliffs, an aircraft or a helicopter.”

There is a wide range of pyrotechnic flares available, and each has a specific function. The para red rocket for example, is a long-range signalling device, which deploys a flare suspended on a parachute at 300m in height and burns for a minimum of 40 seconds at 30,000 candela (candle power) as it slowly descends.

Para red rockets can be visible for over 30 miles. It is recommended that in distress,



▲ Justine Heeley, managing director of Drew Marine Signal & Safety.

two para red rockets should be fired with a 30 to 40 second gap in between. This enables someone catching sight of a flare to be sure it is a genuine distress signal and to call for assistance.

It is worth bearing in mind that when far out at sea, the nearest rescue vessel will often be a passing ship, where watch crews are trained to recognise the signal generated by pyrotechnic flares.

After the long-range signals have been deployed to get help, there is a choice of shorter-range signalling devices designed to pinpoint your position to rescuers, including the red handflare, which burns at 15,000 candela for 60 seconds and is visible over three miles. Six red flares are stored in all life rafts, along with four para red rockets and two orange smokes.

These handflares are designed for day and night use, while orange smokes are designed