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Tom Anderson

...is the founder and Managing Director of Blue Stream Consulting. As an engineer, he has held technical, advisory and strategic roles in safety critical industries, including construction, reprocessing and decommissioning sectors of the UK nuclear industry. As a qualified Occupational Psychologist, Tom has implemented behavioural and transformational change programmes in the oil & gas, nuclear and healthcare sectors. His fields of expertise include High Reliability Organisation (HRO) practices, safety culture development, safety leadership improvement and workforce behavioural change. As part of his current PhD research with Lancaster University Management School, Tom is investigating how oil & gas workers engage and make sense of safety issues in the local workplace and larger organisational setting.

HIGH RELIABILITY ORGANISATIONS (HROs): A PATH TO REDUCING HYDROCARBON RELEASES?

Words: Interview with Tom Anderson, Director, Blue Stream Consulting. By Dr Rachel Parratt

Ageing UK oil and gas platforms present us with unique challenges. Hazards associated with degrading equipment can compromise asset integrity, potentially leading to accidental hydrocarbon releases (HCRs), which the Health and Safety Executive (HSE) monitor as a key indicator of how well the offshore industry is managing major hazard risks and the integrity of installations.¹

While the HSE's initiative to drive down HCRs has been effective, with a decrease in major and significant HCRs from over 110 in 2001/02 to a static annual average of 73 over the last 5 years, new initiatives are now in place to reduce this figure even further. In 2010, member companies of the UK offshore industry's safety initiative, Step Change in Safety, made a commitment to achieve a 50% reduction in the number of reportable HCRs by the end of March 2013. Two years into the programme, major and significant HCRs have been reduced to 51 (2011/12 figures).² This is

good news, but the recent major oil and gas leaks from the Gannet and Elgin platforms highlights the need for the industry to remain focused on HCRs as potential contributors to major accidents offshore.

How can we remain focused on HCRs?

The December 2011 Maitland report noted that 'effective control and management of major hazards requires a good safety culture to pervade an organisation and installation'. The report also stated the need for personnel offshore to 'cooperate on many issues, not least the prevention of major accidents where securing a strong culture of safety and environmental awareness is vital to the effective management of risks'.³

Maintaining a positive safety culture is difficult to achieve.



Securing a strong culture is vital to risk management

What is a good safety culture?

There are a number of popular ways to explain safety culture, such as 'what happens in an organisation when no one is watching'. For example, a Lloyd's audit on the Deepwater Horizon rig a month before the April 2010 disaster found that there was a 'strong team culture onboard, and the levels of mutual trust evident between the crews meant that the rig safety culture was deemed to be robust...'.⁴

Ironically, on the evening of the Deepwater Horizon tragedy, visiting Transocean and BP VIPs held a conference with the rig's leadership. At this meeting, the BP Vice President for Drilling and Completions stated that 'Deepwater Horizon was the best performing rig in our fleet and in the Gulf of Mexico. And I believe one of the top performing rigs in all the BP floater fleets from the standpoint of safety and drilling performance'.⁵ So, maintaining a positive safety culture is difficult to achieve; as Professor James Reason (a world leading expert on human error) said, 'Like a state of grace, a safety culture is something that is striven for but rarely attained'.⁶

So, do true safety cultures exist?

Theory and experience suggests that the more complex the technology and operating environment, the greater the chances of failure – and consequences of that failure. However, there is a group of organisations that operates within extremely testing and complex operating environments, and yet stay virtually error-free over long periods. High Reliability Organisations (HROs), such as US nuclear powered aircraft carriers (supercarriers), nuclear power stations, and Air Traffic Control systems reduce the probability of serious errors, through good organisational design and management. The complex systems of HROs mean that they have a large degree of 'redundancy', with system back-ups, and more than one person available at any time to do a particular job. HROs have a strong focus on getting things right first time, as they work under the assumption that their first error may be their last.

'Offshore' HRO operators, such as nuclear powered supercarriers have the potential for multiple accident scenarios. For example, fighter jets take off and land simultaneously on a weapons-loaded, moving airfield, often without radar. Jets are launched from a 9 metre wide deck using a one million horse power catapult, and on landing at full power, are stopped using a hook and wire system. The aircraft carrier crew, more than

HRO generative safety cultures – 'safety is the way we do things around here'.

3000 strong, are mostly under 21 years of age – a third of whom rotate every twelve months. Despite these huge operational challenges, supercarriers manage to operate virtually error free.

HROs really do have true, generative safety cultures, which can be summed up as, 'safety is the way we do things around here'. These outstanding safety cultures are achieved by strong military command and control systems, where command is hierarchical. While procedures are important, workers at all levels are empowered and trusted to make important safety-related decisions. For example, any crew member on a supercarrier can 'push the button' to abort take offs and landings if debris is found on deck. It therefore makes sense that in a generative safety culture, the processes and procedures that workers are expected to follow are realistic and meaningful to everyone.

Can offshore oil and gas platforms become HROs?

Yes they can. Supercarrier crews and workers in nuclear power plants organise themselves in a particular way to achieve high reliability – by using 'organisational mindfulness' to anticipate and manage unexpected events.⁷ Mindfulness, in effect, offers us a template to become an HRO, and has allowed organisations as diverse as Wildland Firefighting crews, chemical plants and High Dependency medical wards to be considered High Reliability Organisations.

This mindfulness template allows workers on oil and gas platforms to see all failures as insights into the health of their operating system, and to conduct thorough analyses of any near misses. Mindfulness encourages diverse perspectives, and a deep respect for the unknown. It also means that crews will have excellent Situational Awareness i.e. be aware that sometimes they will need to make sense of conflicting information to get a 'big picture' understanding of unexpected events – during a hydrocarbon release, for example.

HROs are action driven. If an HCR does occur, a mindful asset has the knowledge and skills to deal with it, and be resilient enough to handle any unanticipated dangers.

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To find out more about how HRO practice can help to develop safety cultures in the oil and gas industry, contact **Tom Anderson** at Blue Stream Consulting on:

Mob: 07880 556999

Tel: 01768 878107

www.bluestreamconsulting.co.uk