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Asian Focus: News from the region
Bill Skinner: "Our greatest asset is our people."

Accident prevention: mindfulness is vital

Can we use High Reliability Organisation (HRO)-type thinking to reduce offshore accidents between platforms and OSVs? Tom Anderson, director of Blue Stream Consulting, a company with extensive experience in safety critical industries, advocates that serious incidents can be prevented through good organisational design and management.

Accidents between offshore oil or gas installations and vessels are one of the major hazards to fixed or floating assets, and allisions, or impacts between a stationary platform and a moving vessel, are by no means isolated incidents.

Data from the Health and Safety Executive's Ship/Platform Collision Incident Database lists 557 'collision' incidents between vessels and oil or gas installations that occurred on the UK Continental Shelf (UKCS) between 1975 and 2001. Of these, 86 caused moderate or severe damage to the asset, and 549 were caused by in-field vessels, two-thirds of which were supply vessels. So up until about 10 years ago, these sobering statistics roughly translated to nearly one 'collision' a fortnight.

Have offshore allisions been reduced? With the lack of readily-available up-to-date data, it is hard to know, but UKCS collision event data up to 2005 has shown a decrease for both in-field and passing vessels (vessels not operating in connection with the installation). This may be due to improved communication systems, electronic charting and navigation techniques, and more active reporting of incidents.

Even with monitoring and appraisal of allision risk to UK offshore oil and gas installations, allisions still occur, and when they do occur they are not always minor scrapes. The *Maersk Feeder* and *Thistle* allision in June

► Personnel on platform loading equipment on to OSV.

▼ OSV in position for unloading to platform.



2009 caused extensive damage to the supply vessel and damage to the platform, and the *Putford Voyager* and *Leman ADI* allision in December 2007 not only resulted in damage to the supply vessel, but platform repairs were needed above and below the waterline.

One of the most disastrous allisions between a supply vessel and a platform occurred in July 2005 off the west coast of India. During this incident, a multi-purpose support vessel, the *Samudra Suraksha*, lost control, drifted and collided with the *Bombay High North* oil and gas production platform. This resulted in the vessel rupturing a riser on the platform that carried oil from subsea wells. Escaping hydrocarbons ignited, and the resulting major fire reduced the platform to molten metal in just two hours. Of the 361 personnel onboard, 11 were killed in the accident and 11 others were reported missing, presumed lost. The *Samudra Suraksha* was also damaged during the fire, and capsized and sank the following month.

With most of the allision risk coming from attendant supply vessels, and the extensive

vessel support needed for the decommissioning of old UKCS assets planned in the near future, how we avoid and decrease this risk is more important than ever.

While the updated 2010 *Guidelines for Ship Installation Collision Avoidance* developed by Upstream Oil & Gas UK and the Health and Safety Executive, point to robust operational procedures, good process, and state-of-the-art technology, such as automated radar detection and tracking systems, we cannot ignore the important role human factors play in allision avoidance.

By integrating both people and processes, HROs are able to prevent accidents. HROs are exemplified by trust, flexible hierarchies (where deckhands are empowered to make important on-the-spot decisions), redundancy (system back-ups, and more than one person to do a particular job), continual learning from small errors, with fast feedback and actions to prevent similar errors. Strong safety cultures are developed through organisational 'mindfulness', and accidents are prevented through good organisational design and management.

HRO practices are expertly demonstrated by a number of industries, including nuclear power stations and nuclear aircraft carriers, where quick thinking to avoid errors and fast response times to unexpected safety failures are part of daily operations.

One of the most extreme and dramatic examples of how reliably and safely HROs work is demonstrated by the 'smoke jumpers' and 'hotshot crews' of the remote wildland fire-fighting teams of the US Forest Fire Service.

The main advantage to having smoke jumpers fight forest fires is that they can reach remote areas of forest where a fire is beginning to blaze, and deliver a quick initial attack. Teams of about 20 smoke jumpers parachute out of planes or helicopters, assemble hand-held fire-fighting equipment, and food and water supplies are parachuted nearby, making it possible for them to be self-sufficient during



the critical first 48 hours of operations. Hotshot crews, made up of career and contract fire-fighters, come together for specific missions, where trust between new team members is crucial for safe operations.

At the fire front-line, not all smoke jumpers in a team work to put out the fire, and the majority may appear to be inactive. But, these individuals are acting intuitively to monitor the safety situation for the whole team, by using their senses (sight, sound, smell) and being mindful to the fast-changing dangerous environment around them. Their philosophy of safe and effective operations is not only understood, but also meaningful to every fire-fighter, guiding their thinking and behaviour.

Following the organisational mindfulness road map enables generative safety cultures to be built at all levels of an organisation or

partnership – from a supply vessel's crew and captain to offshore asset deck crew and managers. It allows for the building of trust, increases response time to near misses, and enhances situational awareness, where crews focus on weak signs of danger, for example worsening weather conditions, schedule stress to meet drop-off times, and small signals that equipment is deteriorating.

By building trust, being acutely aware of allision risk, being 'primed' to anticipate unexpected safety failures, and acting on these to ensure on-going safe operations, are just some of the ways HRO-type thinking and practice can offer the attendant supply vessel and asset partnership a way forward.

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North Sea jobs for 30 years

A £47.5bn business opportunity is opening up for companies in decommissioning the North Sea's huge infrastructure of offshore oil and gas fields according to new research to be published by Deloitte and Douglas-Westwood (DW).

The next 30 years will see enormous demand for the services of supply chain players which will generate a large number of much-needed jobs in the regions under consideration in the report – the UK, Denmark, The Netherlands, Norway, and Ireland.

The new *North Sea Offshore Decommissioning Market Report* highlights that the majority of decommissioning activity and related spend will occur between 2016 and 2031. The projected workload is expected to exceed the capacities of the existing heavy lift vessel

fleet and onshore deconstruction facilities. The delivery of new specialised vessels is urgent and more onshore yards are likely to be needed in order to meet the demand.

Coincidentally, the forecast peak period is also due to see a major increase in offshore wind projects, putting even more pressure upon the offshore industries supply chains, explained Angela MacCormack, report lead author at Douglas-Westwood.

Graham Sadler, managing director, Deloitte's Petroleum Services Group, said: "Decommissioning itself is not a new phenomenon – indeed, over 100 small platforms a year have been removed from the Gulf of Mexico using well developed procedures. However, the challenge posed by the North Sea structures – because of their heavier weight and the local climate – represents a major challenge on a totally different scale."

Orders stress an international focus

IHC Merwede has secured orders for advanced vessels and equipment in its core markets of dredging and offshore to the value of 200m euro.

The agreements include a new pipelaying vessel for Subsea 7; an engineering and components package for the build of a trailing suction hopper dredger with BAE Systems; an environmentally friendly deep-water dredger for Zheijang Dredging and a 5,000-tonne capacity carousel-lay system for Royal Boskalis Westminster NV.

IHC Merwede's assignment with Subsea 7 is for the design, engineering and construction of an advanced, 146m pipelaying vessel with a Class-2 dynamic positioning system. The vessel will be used to develop deep-sea oilfields off the coast of Brazil on behalf of Petrobras.

IHC Merwede has also secured an agreement for an engineering and components package with BAE Systems, which has been contracted to build a 6,540m³ trailing suction hopper dredger for Weeks Marine, Inc, USA. IHC Merwede earlier supplied the basic design of the 109mx 24m vessel to Weeks Marine, Inc.

Furthermore, Chinese company, Zheijang Dredging, has ordered an advanced environmentally friendly deep-water dredging vessel.

Some of IHC Merwede's business units have also acquired orders for specialist equipment, including a carousel-lay system for Royal Boskalis Westminster NV. The equipment will be manufactured, assembled and tested in IHC China Support's components factory in Guangzhou.

Watchdog for environmental issues

Kongsberg is to head up a major Norwegian consortium with DNV and IBM to develop an integrated environmental monitoring system.

The purpose of the NOK150m project is to demonstrate solutions for continuous environmental monitoring of operations in sensitive areas covering all phases of an offshore operation, from preparation and drilling to production and demobilisation.

"Kongsberg considers this project as an important step in its long-term strategy in developing integrated, continuous environmental monitoring systems to meet a growing demand for early detection and quicker response related environmental impact from offshore oil and gas activities," said Even Aas, Kongsberg executive vice president.

Morten Thorkildsen, general manager for IBM Norway, added: "HSE is becoming

increasingly important for the industries across the world. Environmental monitoring, as part of real-time integrated operations, is allowing IBM to drive further focus on HSE, not only as part of our world-wide Smarter Oil and Gas initiative, but also across several Natural Resource domains and industries."

Meanwhile, Kongsberg Maritime simulators have been selected for the forthcoming MOSAIC 2 facility (Maersk Offshore Simulation and Innovation Centre) at Maersk Training in Svendborg, Denmark.

The MOSAIC 2 simulator delivery is scheduled to start within six months and includes a Kongsberg offshore vessel simulator which can be configured as a control room on-board a floating semi-submersible rig, a jack up towmaster station and an anchor-handling vessel.