

Close shave for diver as DP system tripped by notepad

SUBSEA SOUNDINGS

It happened in Australian waters but it could have been the North Sea. A diver or divers could have been killed or injured and all because of human error leading to an offshore construction vessel drifting off station during dive operations.

According to the Australian authority NOPSEMA, the loss of position was caused by deactivation of the forward/aft automatic positioning function by unintentionally deselecting the “surge” button on the DP (dynamic position) console located on the bridge which then deactivated the “Auto Position” mode.

It is thought a notepad being placed on the side of the console led to the trip.

The vessel drifted off location by over 40m. This was noticed by a diver when his umbilical started to become taut.

Once the DPO (dynamic position operator) became aware of the excursion, the “Auto Position” mode was reactivated.

During this time, the diver had followed his umbilical, moved clear of any obstacles, and walked with the vessel.

According to Australia’s National Offshore Petroleum Safety and Environmental Management Authority: “A loss of position during diving could cause diver fatalities if their umbilicals or other equipment becomes entangled or snagged on subsea infrastructure during the excursion.

“A loss of position while working in close proximity to a hydrocarbon facility could also potentially cause a collision, leading to a loss of hydrocarbon containment and subsequent fire or explosion.

“In both cases the consequences could involve multiple fatalities.”

Investigation findings

Due to the potential severity of the consequences of this incident NOPSEMA directed its inspectors to investigate the incident by conducting an OHS inspection on board the vessel (independent of the ship operator’s own investigation).

NOPSEMA’s investigation identified that the auto-DP mode buttons (surge, sway and yaw) were located in the left hand corner of the console next to desk space commonly used for completing DP related checklists and logs.

Consequently, these buttons were susceptible to accidental activation by personnel.

The inspectors found that although the incident arose by an accidental and unknowing double press of a button by the DPO, the design of the DP system allowed a human error to escalate this act into a

dangerous occurrence by neither requiring any positive confirmation of deactivation of “Auto Position” mode nor providing any alarm that required acknowledgment that “Auto Position” mode had been de-activated.

The situation was exacerbated and recovery impeded as deselecting the “surge” button automatically deactivates the excursion alarms in that axis and the DP display was no longer providing useful feedback in terms of the loss of position event as the excursion rings started to track with the vessel’s movement.

If either of the controls identified above were in place, NOPSEMA inspectors figured it was unlikely the incident would have escalated to a loss of position event.

In order to rectify the issue the operator, with assistance from the manufacturer, are currently upgrading the control systems software to provide a separate dialogue box confirmation requirement when deactivating the “Auto Position” mode.

Key lessons

- Control system interfaces should be designed to account for foreseeable human error. Adequate control measures to prevent and recover from errors should be in place.

- For DP vessels, operators need to ensure that suitable controls are in place to prevent a single inadvertent act from leading to a loss of position.

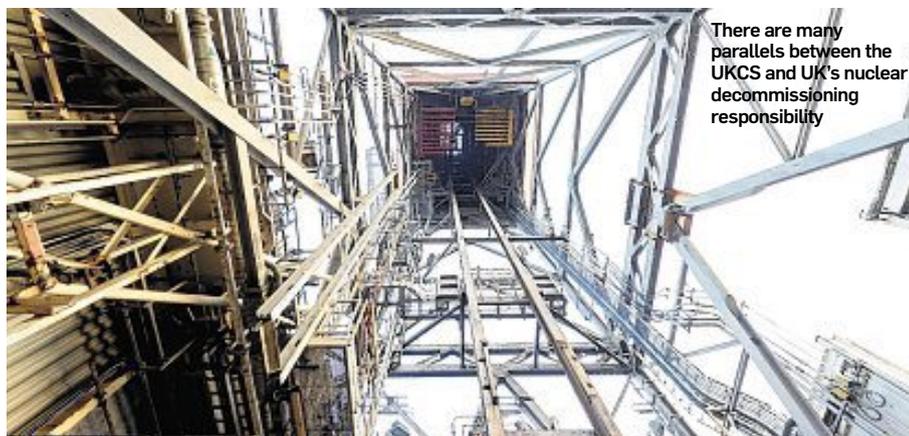
- Double press activation for switches with safety critical functions may not be an adequate barrier to prevent an inadvertent action. More robust methods need to be considered.

- DP systems can prevent inadvertent operator selection in several other ways including operation of two separate selection devices and using screen based question pop-ups.

- Monitoring tasks are not a human strength; hence control panel operators are heavily reliant on control systems to provide alerts of any unsafe operational conditions, to allow them to problem solve the issue (which is a human strength). Good control system design should account for this.

- Switches with safety critical functions should be positioned to avoid accidental activation/deactivation that could cause an unsafe condition.

- Facility operators need to ensure that lessons are learned from previous incidents and any additional controls suitably communicated to the workforce. In this case, the vessel had a similar human error induced loss of position event in 2009. NOPSEMA did not name the vessel.



There are many parallels between the UKCS and UK’s nuclear decommissioning responsibility

Technology Transfer

ASSET MANAGEMENT

R2S

BY BOB DONNELLY

“A by-product of the UK having the world’s most complex site to decommission is having the world’s most skilled and expert decommissioning workforce and supply chain, increasingly in demand in a wide range of internal markets”

You would be forgiven for thinking that the above quote referred to offshore oil & gas decommissioning – but you’d be wrong . . .

These are the words of Tom Greatrex, chief executive of the Nuclear Industry Association who, in a recent article, not only highlighted the parallels between the UKCS and UK’s nuclear decommissioning responsibility, but reiterated what many North Sea commentators have espoused in recent months; that decommissioning brings with it opportunities.

With Oil & Gas UK estimating a \$30-\$60billion spend in this sector over the next 30 years, for many within the supply chain, decommissioning is now very real.

As a sector, it has been under the same pressure to drive innovation and efficiencies as the wider industry and as a result, many of these potential opportunities involve new and innovative uses of technology.

Our own experience as a technology service provider shows that decommissioning project teams are meeting these challenges by embracing technological solutions, and providing companies like Return To Scene with opportunities.

While there have certainly been similarities in the way we’ve seen our R2S Visual Asset Management

(VAM) technology used in earlier project phases for activities such as asset familiarisation, reduced time spent on engineering surveys, reduced offshore travel and bed space requirements, for example; the latest feedback we have received shows the system’s positive impact on collaboration in decommissioning projects.

Horizontal collaboration between operating and non-operating partners was enhanced, valuable time, bed space and transit costs were saved by the operator’s use of R2S to provide its non-operating partners with an onshore “virtual visit”, negating the need for an offshore site visit.

On the vertical supply chain axis, one of the stand-out benefits from the use of R2S by one operator was the ability to provide removal contractors, not all of which had previous offshore experience, with the ability to visualise the work site and accurately plan their work without the requirement for a time consuming and costly offshore visit.

Indeed, this was echoed by experienced offshore suppliers who highlighted that the use of R2S in the tendering process gave them the ability to provide a more accurate cost to their client, the operator. Effectively, its use de-risks unknowns and surprises once offshore that could impact on work scope, time and billable costs.

R2S was utilised for this decommissioning project as a direct result of the positive experience and understanding of the capabilities of the technology acquired by individual team members in previous roles.

As decommissioning project teams are created, it is important that their experiences of technologies proven at earlier phases of asset lifespan are given consideration as R2S was on

this project in order to maximise the value of previously acquired technologies.

It is equally important to recognise that technology transfer is not only applicable within a specific industry. As a complex industry already knee-deep in decommissioning, nuclear is a logical area from which we can learn. (This is a learning curve that is being accelerated for us through our new sister company, James Fisher Nuclear Ltd.)

As the opening quote of this column shows, UK nuclear decommissioning has become the world leader in its field. Furthermore, it is not shy to adopt technologies and skills from other industry areas. Indeed, late last year, R2S was used to conduct a pilot project for the Dounreay Site Restoration Limited (DSRL). Equally, the nuclear sector has experience in many of the challenges similarly faced in the UKCS today.

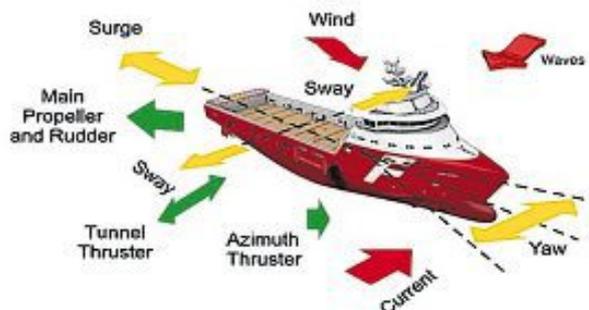
Whatever the source, “the use of technology, innovation in equipment and the application of new techniques are all fundamental to successful and cost-effective decommissioning”. (Yes, that’s another quote from Mr Greatrex.)

We are certainly viewing decommissioning as an opportunity for our own technology, and we will continue to innovate to meet the challenges this ultimate phase of asset management presents.

It is accumulative efforts of companies like Return To Scene, innovative SMEs, of which there are many here in the north-east of Scotland, that generates the potential to create a go-to global centre of excellence.

And that’s exciting!

Bob Donnelly is a director at Return To Scene Ltd



DP systems automatically control the position and heading of a vessel by using active thrusters to maintain equilibrium with wind, waves and current



Dounreay radioactive waste clean-up