

Energy security
How to protect offshore assets
in a connected world



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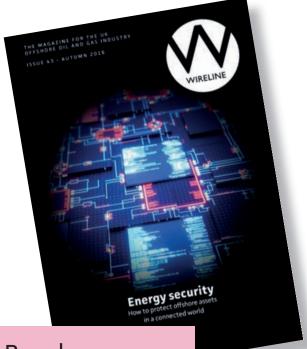


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ecent months have seen encouraging progress from a stream of new UKCS developments. In September, Total announced a major gas discovery at its Glendronach prospect, west of Shetland. With existing infrastructure around the Edradour field, the partners hope to commercialise the field quickly to unlock recoverable resources in the region of 1 trillion cubic feet – providing motivation and momentum for investors and industry.

It is especially encouraging as we digest the findings of Oil & Gas UK's 2018 Economic Report, which highlighted that an increase in drilling activity is key to unlocking the remaining potential of the UKCS. Production this year is on track to be 20 per cent

higher than 2014, and more new projects have been sanctioned by E&P companies in 2018 than the last two years combined. Meanwhile, cost reductions and improved operational performance continue to make the basin an attractive prospect for investment.

However, the industry also finds itself at a crossroads. As well as the lack of exploration activity, the supply chain also continues to feel the squeeze after several years of pressure during the downturn. Supporting suppliers while maintaining efficiency is vital to deliver our ambition for the sector, as outlined by Vision 2035.

Much of this strategy is possible thanks to dialogue with and support from government. In this issue of Wireline, we hear from Energy and Clean Growth Minister Claire Perry [p. 22] about the long-term future of oil and gas in the UK, and its role in the global transition to a low-carbon economy. This includes forging links with industry groups such as the Oil and Gas Climate Initiative (OGCI) and the formation of new committees for technology development, such as the CCUS Cost Challenge Taskforce.

As well as the energy transition, cybersecurity is rising on industry's agenda. September saw Oil & Gas UK hold its first cybersecurity seminar, illustrating the potential threats posed and the concerns held by operators and the supply chain. As well as hearing from some of the event's keynote presenters, we also learn from cyber-experts Leidos and quality assurance group DNV GL about how best to manage that risk, and what businesses can do to put robust security strategies in place [p. 16].

Over the summer, the Oil & Gas Technology Centre (OGTC) launched its latest initiative in support of small pools development. Led by engineering firm Crondall Energy the 'Facility of the Future' project will see a group of industry partners evaluate and demonstrate technologies for a lowercost normally unmanned installation which could help unlock marginal resources [p. 24].

Of course, developing people is just as important as developing technology, and one of the best ways to do this is through industry mentoring. We profile the work of both member companies and individuals leading the way in supporting and nurturing talent within their organisation or field, asking what makes these schemes valuable, what makes a good mentor, and most importantly - how more people can get involved [p. 36]. I would urge all in the industry to consider how they can support new and existing talent to ensure the next generation of staff are ready and equipped to help transform the UKCS – to 2035 and beyond.



Deirdre Michie, Chief Executive, Oil & Gas UK

Wireline is published by Oil & Gas UK, the voice of the UK oil and gas industry.

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Economic Report 2018

September saw the publication of Oil & Gas UK's Economic Report 2018. The report found an improved landscape for the sector, with reduced costs, competitive fiscal terms, improved operational performance and more stable oil and gas prices.

The report shows:

- Operating costs have halved and are now being sustained at around \$15/boe
- Production is on track to be 20 per cent higher than 2014
- · More major new projects have been sanctioned by Exploration and Production (E&P) companies so far this year than the last two years combined

Even though four exploration wells were spudded in the first eight months of 2018 – with more wells to yet to come - total exploration activity this year is expected to be the lowest since 1965. In addition, the capacity of the supply chain has been reduced in recent years, as revenues and margins continue to be squeezed.

By 2021 there could be capacity constraints emerging across the supply chain as a result of these reductions, and an expected increase in new development activity at home and abroad. The constraints are expected to be felt most across drilling and wells services and within engineering and subsea sectors.

Speaking at the report's launch to industry leaders in Aberdeen and London, Oil & Gas UK Chief Executive Deirdre Michie said: "Industry is emerging from one of the most testing downturns in its history. However, the steps that have been taken by industry, government and the regulator have delivered tangible results.

"Choosing the correct direction of travel is critical to securing our ambition for the future, outlined in Vision 2035. The sector deal is a further important step in delivering this vision.

"Essential for security of energy supply, supporting hundreds of thousands of skilled jobs and contributing billions to the economy, this is a vital industry. As our Economic Report shows, with the right stewardship across the industry, it will continue to play a leading role for many decades to come."

The 2018 Economic Report can be downloaded here: https://oilandgasuk.cld.bz/Economic-Report-2018

Workforce Report 2018

Oil & Gas UK's 2018 Workforce Report shows that total employment is expected to stabilise and increase slightly this year, with direct, indirect and induced employment rising to 282,700, up from 280,000 in 2017. Workforce trends indicate an industry working to deliver Vision 2035 - with efficiency improvements and technological transformation being introduced – suggesting new ways of working for the UK's oil and gas sector.

However, continued investment is needed to stimulate activity and generate sustainable growth. The report shows:

- The west of Shetland area has seen the largest growth in employment with workers in the area more than doubling since 2014 thanks to several major developments.
- The average age of offshore workers in 2017 was 42.2, compared with 42.7 in 2016
- The number of offshore workers under the age of 30 has increased by over 20 per cent since 2016
- · Women represented 3 per cent of the offshore workforce, and 23 per cent for the industry overall
- · Almost 50,000 people travelled offshore in 2017, 6 per cent down on the previous year
- 14 per cent of those who travelled offshore in 2017 were from outside the UK, half of those coming from other EU countries
- The continued pressure on drilling is reflected in the offshore population figures, which have seen a 35 per cent decline in drilling roles since 2014.

Commenting on the findings, Oil & Gas UK's Workforce Engagement and Skills Manager Dr Alix Thom said:

"Our report shows a stabilisation in the total employment supported by industry, returning to levels in line with the long-term trend before the peak in activity in 2014. "This has not been without a personal cost to many, and the revised figures for 2017 show the scale of the downturn is even more severe than previously understood. "Advancements in technology will inevitably spell new ways of working, for example increased digitalisation could see a rise in offshore work being done remotely. It will be vital for the industry to understand the existing and future skill profiles in the workforce and proactively develop the talent required."

The 2018 Workforce Report can be downloaded here: https://oilandgasuk.cld.bz/Workforce-Report-2018







Industry prepares to welcome over 100 apprentices

The UK's offshore industry apprenticeship scheme is gearing up to welcome over 100 new apprentices to its ranks, almost double the number who joined the scheme in 2016.

105 students will join the industry in September through the Oil and Gas Technical Apprentice Programme (OGTAP). The scheme, managed by industry skills body OPITO and the Engineering Construction Industry Training Board (ECITB), has brought almost 2,000 young people into the industry since its establishment in 1998.

This comes after Oil & Gas UK's 2018 Workforce Report confirmed that industry has continued to successfully recruit young talent throughout the downturn, with the number of offshore workers under the age of 30 up by 20 per cent since 2016. With women representing just 3 per cent of the offshore workforce, and 23 per cent for the industry overall, the industry must retain its focus on improving diversity and inclusion across the sector. Applications for next year's intake are therefore particularly welcome from female and ethnic minority applicants.



2018 apprentice Jess Logan, who is 17 and will be relocating to Aberdeen from Portsmouth said: "My cousin, who is a mechanic in the oil industry, did the OGTAP programme a few years ago and told me how amazing it was. The more I learned about it the more it seemed like the best way to pursue my dream career of becoming an electrician.

"I've always loved learning how things work and I grew up doing electrical work with my dad. I find it so satisfying, especially the work I've done on newbuild houses. To think that the electrics in those homes that people use and rely on every single day have been fitted by me is amazing. I love being able to see the impact I've had!

"I'm hoping the apprenticeship scheme will develop my love and understanding of electrics and the opportunity to work in the oil industry will give me an insight into a different way of life as well as the chance to meet new people. I'm also excited at the prospect of getting a helicopter to work!"

Oil & Gas UK Chief Executive Deirdre Michie said: "I'm delighted to see so many young people preparing to join the industry in this year's intake, however we still have a way to go if we want to bring increased diversity to our workforce. As part of the industry's drive to address the gender balance, OGTAP has established a diversity group to explore ways to attract more female applicants to the industry apprentice scheme. I would encourage more girls to follow Jess's example and apply for the scheme next year.

"I'd like to take this opportunity to welcome our apprentices and wish them all the best for a long and fulfilling career in the oil and gas industry."



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Cyber security event underlines importance of understanding emerging risks

Oil & Gas UK hosted its first seminar dedicated to cyber security, with industry leaders sharing their knowledge and expertise to help equip and protect the industry for the future.

The event, sponsored by ABB, was held at the Aberdeen Exhibition and Conference Centre (AECC), and focused on the increasing threat of digital security and how the UK's oil and gas sector can manage and mitigate risks to prevent a systems breach or major incident.

The head of the Department of Business, Energy and Industrial Strategy (BEIS) Energy Cyber Security Team delivered the keynote speech, looking at government's role in mitigating cyber risks from a regulatory and national security perspective. Speaking after the event, Oil & Gas UK's Workforce Engagement and Skills Manager Dr Alix Thom said:

"This fantastic event underlined the importance of understanding the risks of cyber security and how they affect our industry today and in the future... Cooperation and sharing information within the industry is crucial to help companies collectively respond to emerging threats. It's also important to learn from other sectors about how they manage risks and ensure safe and sustainable operations.

"Our speakers provided invaluable insight to the audience today, helping to deepen our understanding of new and everevolving risks to people, assets and businesses brought about by the digital world."

The speakers also included Ben Dickinson, Cyber Security Consultant at ABB, Detective Constable Richard Scott, Counter Terrorism Security Adviser at Police Scotland, and Ross McKenzie, Partner at Addleshaw Goddard LLP.

Further speakers were Joe Goodlad, Principal Cyber Security Specialist, at ADC (Aberdeen Drilling Consultants), who discussed how cyber audits are particularly critical on offshore drilling rigs to ensure safe operations and minimise any threat to production, safety and the wider environment.

Health & Safety Report 2018

The UK's offshore oil and gas industry continued to see improvement across a broad range of health and safety indicators last year, according to the latest Oil & Gas UK Health & Safety Report.

Findings showed a continued downward trend in reportable incidents, with 255 such incidents reported to the health and safety regulator in 2017 - 67 per cent lower than in 2000-01. This is the lowest on record. With no work-related fatalities recorded in 2017, the non-fatal injury rate also continued to decrease across the UKCS.

The report gives an overview of the offshore oil and gas industry's performance in health and safety in 2017 and a summary of activities undertaken by industry groups to protect people working in the sector in 2018.

Despite the continued improvements in the areas of process safety, personal safety, aviation and health, there is no room for complacency. The report notes that major hydrocarbon releases, whilst reduced since 2012, are plateauing at around two per year in the last few years. Industry efforts to drive concerted action in this area

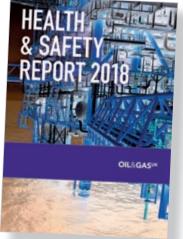
are being steered by Oil & Gas UK in partnership with Step Change in Safety.

Commenting on the report findings, Oil & Gas UK Health and Safety Manager Trevor Stapleton said: "As a major hazard industry, the UK's offshore oil and gas sector has a clear duty to protect the health and safety of our people. Oil & Gas UK's Health and Safety 2018 report provides an informed view of health and safety performance in the UK's offshore oil and gas industry in 2017. The data shows that while we continue to see improvements across a range of trends, there can be no room for complacency.

"That's why Oil & Gas UK is co-ordinating industry action to reduce the number of major hydrocarbon releases. In a year where we marked 30 years since Piper Alpha, we're all too aware of the personal and long-lasting consequences if things go wrong.

"As our industry emerges from a sustained downturn, the health and safety of our people remains a core value and is at the heart of all that we do."

"We've committed to working with the regulator, industry and, in collaboration with Step Change in Safety, to help steer efforts in the areas of process safety leadership, audit, self-verification and sustainable learning.



Local business rallied to support Pound for Piper charity

Supporters of the Pound for Piper Memorial Trust, have been given the opportunity to buy a limited-edition print commissioned to commemorate the 30th anniversary of the Piper Alpha tragedy.

The Trust commissioned a total of 167 prints, one for each individual life lost in the disaster, from local artist and long-term supporter, Elizabeth McAlpine, who donated the artwork from her portfolio. Each of Elizabeth's prints feature the Memorial Monument created by sculptor, Sue Jane Taylor, together with preparatory sketches and a detailed description of the sculpture which depicts three offshore workers. The charity has maintained the Memorial Garden in Aberdeen's Hazlehead Park since 2013.

Matt Abraham, Oil & Gas UK's Health and Safety Director, said: "Funds raised from the sale of the prints will help pay for the ongoing maintenance of the Piper Alpha Memorial Rose Garden and Oil & Gas UK is happy to support the Trust's efforts to ensure it remains a place of reflection and remembrance for those who survived that night and for the families and friends of those who lost their lives "

Those wishing to support the upkeep of the Memorial gardens by purchasing a professionally framed print at a cost of £267 are advised to contact Steve Rae, Chairman of the Trust, at Steverae1962@hotmail.com to obtain a print number which they can reference when making a payment.

The Trust's Just Giving website is at https://www.justgiving.com/fundraising/ *poundforpipermemorialtrustprintsales*

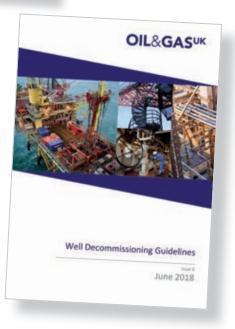


Oil & Gas UK has published a new edition of its Well Decommissioning Guidelines, with updates on good practice and innovation. The guidelines provide recommendations to support well operators in managing the decommissioning process, while maintaining health, safety and environmental standards. Specialists from Oil & Gas UK's Wells Forum and stakeholders – including the Health and Safety Executive, the Oil and Gas Authority and Department for Business, Energy & Industrial Strategy - contributed to the updated guidelines.

https://oilandgasuk.co.uk/product/op105/







Cost of decommissioning declines

The Decommissioning Cost Estimate Report published by the Oil and Gas Authority on 27 June shows that the estimated cost of decommissioning on the UK Continental Shelf is falling. The updated assessment shows that despite including more assets and infrastructure than the previous year, estimated costs from 2018 onwards are lower. It also reports that compared to the same portfolio as last year, estimated costs from 2017 onwards have reduced by 7 per cent.

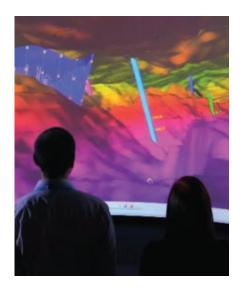
https://www.ogauthority.co.uk/media/4925/decommissioningcost-report-2018.pdf

New OFSI guidance for importers and exporters

HM Treasury's Office of Financial Sanctions Implementation (OFSI) has published sector-specific quidance for importers and exporters. This includes a differentiation between trade and financial sanctions, details on when an OFSI, as well as an export control licence may be required, and financial sanctions along the export chain.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/ attachment_data/file/706182/FAQ_guidance_for_the_import_and_export_sector.pdf





New era of exploration for North Sea as 31st Licensing Round opens

The Oil and Gas Authority formally opened the latest Licensing Round in July, which focuses on the frontier and underexplored regions in the UK Continental Shelf.

During the 30th Licensing Round in May, 123 licences were awarded for 229 blocks in mature areas of the UKCS, to 61 companies. The 31st Licensing Round will benefit from fresh seismic data funded in part by HM Treasury, and will be supported over the longer term by increased transparency of data and samples from the new National Data Repository.

The Licensing Round will close on 7 November 2018 with companies expected to find out if their bid is successful in the first half of 2019.

End use relief - deadline extended

Exchequer Secretary to the Treasury, Robert Jenrick MP, met with Oil & Gas UK and industry representatives on 26 April at the Fiscal Forum held in our Aberdeen office. Mr Jenrick confirmed that HM Revenue and Customs' (HMRC) plan to remove End Use Relief by July 2018 has been delayed until at least April 2019. This change follows discussions with the Treasury, BEIS, HMRC and MPs from across political parties, as well as discussions in a Parliamentary debate in which Energy and Clean Growth Minister, Claire Perry MP, committed to intervene. Oil & Gas UK will continue to work with HMRC to seek a long-term alternative solution to End Use Relief for the UK offshore industry.



Robert Jenrick MP, Oil and Gas Authority and Oil & Gas UK representatives met again in August 2018

New Society for Petroleum Data Managers

A new professional society has been launched with the aim of inspiring lifelong learning, advanced knowledge, and career development for petroleum data managers. The Society for Petroleum Data Managers (SPDM) is a result of collaboration between Oil & Gas UK subsidiary Common Data Access Limited (CDA), and Norway-based data and information management community ECIM. Both organisations have an established track record of supporting and promoting petroleum data management in the oil and gas industry, and the joint formation of an independent society is a natural progression of these initiatives. SPDM is a member-driven, non-commercial professional society, populated by individual members. It is currently led by an interim board, comprising individuals nominated by the founder organisations. The objective of the interim board is to establish the society and initial services, begin recruiting members, and organise elections to establish and hand over governance to a member-elected board.

All individuals with an interest in petroleum data management are invited to join - membership opens in 2019.



Legal conference

Despite the wild weather, a record number of delegates attended the 5th Oil & Gas UK legal conference at Aberdeen airport on 20 September.

Following a business update from Mike Tholen, topics covered included OGA regulatory matters, decommissioning, legal privilege, 'Commercial Sharp Practice' and an update on the latest court decisions on contractual interpretation. Murdo McLeod QC provided an outstanding after-dinner speech, and a good number of delegates then answered the Conference Co-Chair's call to "Carry on Networking" in the bar until well after midnight.





New decommissioning team unveiled

Oil & Gas UK has appointed a team of decommissioning experts in a move that underlines the industry body's strengthened capacity to serve the growing decommissioning needs of its members and key stakeholders. The decommissioning market in the North Sea is forecast to grow steadily and is likely to be worth £1.8 billion per annum on average over the next decade (£2 billion in 2017).

The Aberdeen-based trio, comprising Richard Heard, Decommissioning Consultant, Sam George, Decommissioning Business Adviser and led by Decommissioning Manager Joe Leask, will focus on providing insight into the shifting decommissioning landscape and the opportunities it presents to the industry's world class supply chain.

Commenting on his appointment during a site visit to Oil & Gas UK member Augean North Sea Services, Leask said: "I'm looking forward to building on the extensive work already undertaken by Richard, who has many years of experience in this area. The team will be working closely with regulators and the UK and

Scottish Governments to develop an efficient, cost-effective decommissioning capability, sharing best practice and promoting our decommissioning expertise at home and abroad.

"As decommissioning activity is predicted to grow in the maturing North Sea, the UK supply chain has a major opportunity to develop world-class decommissioning capabilities. I'm looking forward to this team playing an integral role in helping our members capitalise on that."

Jaibo Palmer, Head of Decommissioning at Augean, said: "It was a pleasure to welcome Oil & Gas UK's new decommissioning team to our newly expanded Dundee Decommissioning and NORM Decontamination facility.

"Augean North Sea Services are an established leader in providing complete waste management services to the oil and gas industry. In addition to our Dundee facility, we have Permitted sites in Lerwick, Aberdeen and Great Yarmouth, which are further supported by six additional waste treatment sites across the UK. This means we are uniquely positioned in both Scotland and England to support the growing decommissioning sector, which is set to benefit the industry's supply chain across the length and breadth of the UK."



Share Fair 2018 focusses on the supply chain

Share Fair is Oil & Gas UK's flagship business development event aimed at highlighting supply chain opportunities. The event, held on 31 October 2018 in Aberdeen, is being refocussed to give supply chain companies greater access to and early engagement with potential clients via senior operational and technical staff, leveraging their knowledge of forthcoming UKCS developments.

We are also inviting companies to submit an abstract which will be considered as possible pitch session during the New Solutions / Innovation Forum section of Share Fair 2018. Within our new Dragons' Den-style event, organisations will pitch to industry leaders, showcasing innovation and solutions to key industry-wide challenges and opportunities.





Membership Matters

Companies join Oil & Gas UK

We are pleased to welcome the following companies to Oil & Gas UK membership: Atlantic Offshore Scotland Ltd, Commission for Regulation of Utilities, Consub Limited, Craig International, Gall Thomson Environmental Ltd, Hydrasun, Ingen Ideas, IPS Group Ltd, Kirktown Engineering, Kolina Limited, Leyton UK Limited, MCM Crisis Response Limited, Noble Drilling (Land Support) Limited, OES Asset Integrity Management, Red Wolf Consulting Limited, Simmons & Company International, Tendeka and TouGas Oilfield Solutions Gmbh

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PED/ATEX Directives | Thursday, 11th October
Managing Commercial Risk | Tuesday, 30th October



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Introduction to Valve Actuators | Tuesday, 2nd April
Control Valves (CPD Accredited) | Wednesday, 3rd April
Safety Valves (CPD Accredited) | Thursday, 4th April
Valves Advanced Level | Monday 29th April - 30th April
PED/ATEX Directives | Wednesday, 1st May
Safety Integrity Levels (SILs) | Thursday, 2nd May

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Share Fair

31 October, AECC

Oil & Gas UK Awards

1 November, AECC



London Breakfast Briefing

Energy Transition - Protecting Our Licence to Operate 13 November, White & Case LLP

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Offshore Decommissioning Conference

26 – 28 November, Fairmont Hotel, St Andrews

Aberdeen Breakfast Briefing
- UK Oil & Gas in the Third Age of Energy 4 December, AECC

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5 December, AECC

Environmental Seminar

6 December, Oil & Gas UK, Aberdeen

2019

Exploration Conference 2019

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Digital technologies are transforming the UK offshore sector, but they also open the industry to new cybersecurity risks. Wireline explores the scale of the issue, and how businesses can help ensure they are protected.

s digitalisation progresses in the North Sea, it brings the power of the internet closer to the operational environment. Yet that proximity also increases exposure to the kind of digital threats and security challenges faced by most connected businesses. While many may be generic and well-known risks - scattergun email phishing attempts, for example - others are highly specific to industry, and may even target particular companies or facilities. In that regard, no company working in the sector can afford to be complacent or underprepared.

Historically offshore assets have been designed with less attention to cybersecurity, largely because of their remote nature, both geographically and in terms of operational control. Now, in pursuit of greater autonomy and efficiency most have embraced internet-enabled technologies for their ability to provide new forms of remote monitoring, control and data.

With this connectivity come risks that must be managed. Cyber-attacks, in the case of offshore oil and gas, have the potential to do serious damage, given the already hazardous nature of exploration and production activity. Even new facilities - which are designed and built with these threats in mind require constant attention to ensure adequate defences in a fast-evolving environment. Meanwhile, older assets may have legacy vulnerabilities that must be identified and protected accordingly, all of which require serious time and resources.

Varied threats

According to professional services consultant PricewaterhouseCoopers (PwC), the primary perpetrators of cyber-crime (in terms of the risks posed) are state-sponsored agencies with specialised hackers at their disposal, or organisations engaging in corporate espionage. Outside the interests of nation states, the main motives for this sort of attack on oil and gas-related companies are likely to be the acquisition of intellectual property (IP), reservoir information or research and exploration data.

Beyond attempts to access information however, in the worst-case scenario, a sophisticated hacker could interfere with operations - posing a risk to life, assets and the environment. By accessing control systems intruders



Companies need to take a strategic rather than tactical approach; preventative rather than reactive. Cybersecurity should no longer be just an add-on to the digital transformation.

Simon Daykin



could, for example, cause the flow of natural gas through a pipeline to grind to a halt, trigger an explosion at a petrochemical facility or do damage to an offshore drilling rig that could lead to an oil spill, according to EY.

"We've seen attackers trying to gain access to safety systems, as was the case with the Triton malware incident in the Middle East," said Matthew Freeman, global cyber-security manager at DNV GL. "The implications of this sort of attack are considerable... the only thing that stopped it from being a major event was an error in the hacker's software that caused the safety system to shut down."

DNV GL global service line leader for cyber security, Mate Csorba, noted some examples of major attacks closer to home too, including one on the Norwegian oil industry in 2014 by a "threat actor with extensive resources". At the time, National Security Authority Norway (NSM) said 50 companies were hacked and 250 more were put at risk. "Reportedly, the attackers were looking for ways to persist inside corporate networks and install additional malicious code for further stages of attacks," Csorba explained. In its annual report for 2017, NSM concludes that multiple cyber espionage campaigns, possibly state-backed, continue to target the Norwegian industry. "Attackers are becoming more sophisticated and

there are a wider range of targets as digitalisation spreads," said Csorba. He pointed out that terrorism was another risk, citing the hostage crisis at the In Amenas gas facility in Algeria in 2013 which, although saw no element of cyber-crime, "proved that assets operated by the largest Norwegian energy company may be targeted by international terrorist organisations."

However, Freeman said most attacks were not of this sort and represented a lower level of risk: "In the North Sea there are a variety of perpetrators some intrusions appear to be targeting intellectual property and business strategies, either by rival companies or syndicated crime... Sometimes information is simply collected and sold on. Hackers do not always know the nature of the systems they are attacking – often they are just exploring or testing for vulnerabilities, and a lot go undetected."

"Alternatively, the threat can be internal from a disgruntled employee or sometimes there is no real intent, they are just random," he added. For example, loading operations at Equinor's Mongstad facility were brought to a standstill in 2014 by an IT technician accessing the wrong server remotely inside the production environment. "This incident led to the company revising its outsourced IT services," said Csorba.

Simon Daykin, UK chief technology officer at Leidos – a system and service integration organisation involved in cybersecurity across all areas of critical national infrastructure, including the US government – echoed the notion that attacks may be targeted or opportunistic, and that the industry must be prepared for both. "As last year's ransomware campaigns have shown (including the WannaCry attack whose victims included the NHS), companies no longer have to be targeted to suffer downtime and financial consequences of insufficient cyber-resilience," he said.

Growing awareness

Until recently there had been a lack of awareness of cybersecurity in the industry, according to Freeman. "It's a cultural issue – there's a need to increase cultural awareness in the industry," he said. To that end, and following the 2014 attacks in Norway, DNV GL and companies from within >

Cybersecurity | Resilience

the oil and gas and cybersecurity industries set up a Joint Industry Project (JIP) to establish common recommended standards. "We needed countermeasures for the various risks addressing the technology, design and operation; looking at both people and processes," he explained.

The JIP would go on to produce the standards set out in DNV GL's RP G108 quidelines. Freeman said that by "adhering to recommended practice it has been possible to set expectations and tighten culture. Organisations can check behaviour and enforce correct procedures with their own staff and contractors... The JIP helped raise awareness – larger companies are furthest ahead."

Adhering to the guidelines helps reduce insurance premiums and avoid fines, including under new European regulations such as the EU Directive on Security of Network and Information Systems (NIS) directive, which is designed to enforce common minimum standards across critical infrastructure. Responding to these increased priorities, Oil & Gas UK held its first ever cybersecurity event in Aberdeen

in September. During the conference, the Department for Business, Energy and Industrial Strategy's head of energy cybersecurity noted that the effects of these new policies would be felt by the supply chain, as well as operators. "This directive covers a small number of operators, but it does put pressure on the rest of the supply chain to act accordingly and I would expect those operators to be asking more prodding questions of their supply chain going forward," she said. "I think in that context there will be an expectation on some of the large players in the industry but also for the supply chain to up their game a bit."

IT vs OT

There can be a disconnect between IT systems (which are regularly updated and patched by specialists) and operational technology (OT) systems, which are normally in the hands of the engineers who run and maintain facilities. According to Freeman, this can make systems on oil and gas installations more vulnerable: "We need operational knowledge combined with vendors and IT experts - all bring a different perspective and all need to communicate."



As long as companies understand the environment and take a strategic view, the balance is absolutely tipping towards the defender... But companies need to absorb cybersecurity into the culture of their business.

Simon Daykin







DNVGL RP G108

DNV's RP guidelines have been developed as part of a Joint Industry Project, in collaboration with oil and gas majors, vendors and regulatory the different perspectives these stakeholders might have. Its scope cybersecurity incidents in general.

Benefits for the stakeholders are: cost-savings for operators by being efficient when defining cyber security requirements and following them up; cost-savings for the vendors and contractors due to more standard design requirements from the operators; and more simple and effective auditing operator and vendor, when it comes to clearly defining the desired security posture for a cyber-physical asset; and OT and IT convergence, ensuring a successful OT security management approach for the oil and gas asset.

Leidos' Daykin said there had been some convergence, but that "IT and OT are still often run by different parts of the organisation... There are cross-over threats from IT into OT, and organisations need to understand the risks they have and what they need to do... they need to take a strategic approach - where, what and how to mitigate risks."

He said vulnerabilities were often already present in older devices and these needed to be identified by testing, and then dealt with. "More companies are requesting 'penetration testing', which can identify where some of the holes are, including in operational/behavioural matters. Those with older technology embedded in their systems are more vulnerable to random attacks," he explained. "Companies need to take a strategic rather than tactical approach; preventative rather than reactive. Cybersecurity should no longer be just an add-on to the digital transformation."

DNV GL's Freeman agreed: "Any project, retrofit, upgrade involving business or safety critical ICS/OT systems or components should pay >

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Any new project should now be designed with a cybersecurity layer over the top of it... Secure by design is definitely the best way.

Matthew Freeman

special attention to potential zero-day vulnerabilities within the systems or devices being used; plus any emerging threats arising from IT/OT integration activities; plus the humans that come into contact with them."

Learning lessons

Only a very small proportion of attacks get much publicity, which restricts the ability of the industry to learn from past attacks: "It's important to know about and learn from key attacks. Specialist publications give some detail, along with organisations like the SANS Institute. Much of this comes from the IT side, rather than OT, which whilst having crossovers is often industry specific in implementation," said Daykin.

"We can use intelligence from attacks to spend money smartly - learning from lessons in oil and gas and other sectors... There are also several techniques, such as foot-printing, finger-printing, honey-potting and sink-holing, that can be used to detect a threat early on and confine it to a space where you can understand its anatomy and behaviour safely, away from sensitive assets... This enhances security and builds up an understanding of the different methods of attack," he continued.

The anatomy of cyber attacks can be understood in terms of the process that needs to be completed by the attacker to undertake their mission, and Leidos uses a so-called 'cyber kill chain' to model the steps involved in a successful attack, to build a 'defence in depth' protection strategy. "Good defences can mitigate each step and gain intelligence from what's going on," said Daykin. This approach allows defenders to be more proactive and engaged, as opposed to mounting a tactical response that addresses threats as they appear.

Both attackers and defenders are evolving quickly, said Daykin, but the battle now favours the latter – provided they employ a "strategic preventative, proactive and collaborative" approach. "As long as companies understand the environment and take a strategic view, the balance is absolutely tipping towards the defender... But companies need to absorb cybersecurity into the culture of their business. It needs to be part of people, processes and technology across the business to effectively combat the more advanced threats we are facing," said Daykin.

But while defence practices may be improving, more needs to be done following attempted attacks. For one thing, these intrusions are rarely prosecuted, and victims do not always want information about the attempt passed onto police. Daykin added that: "Cyber Forensics needs to be a key element designed in, because it is important to understand what is going on."

With such a broad scope of threats out there, and a sector made up of a diverse range of companies, devising a robust strategy can be daunting. Yet even small companies can take proactive measures. As Freeman noted: "When budgets are relatively limited, perhaps the first thing to think about is which area would benefit from an improvement in the cyber security posture. Organisational cyber security awareness-raising, procedural reviews and policy improvements may be low-hanging fruit, an organisation can handle, or get help with relatively easily."

Speaking during Oil & Gas UK's seminar, ABB cyber security consultant Ben Dickinson outlined how companies could manage such strategies, breaking the process down into various categories, designated: Identify, Protect, Detect, Respond and Recover.

This process involves understanding the type of threats posed to your business, exploring where vulnerabilities may be and using risk assessments to determine which security controls should be adopted. Once these are in place, any intrusions should be detected, logged and investigated. If breaches do occur, Dickinson also highlighted the importance of a robust response and recovery plan, which should include both technical elements - such as backing up and restoring data - and a communications plan to inform customers, suppliers, the media and government of what is happening.

Although this is important work, DNV's Freeman does not believe that security strategies should be prohibitively expensive: "On the technological front, retrofitting of systems, additional hardware costs, or software licences might be significant expenditures. However, in most cases compensating actions can be put in place immediately and provide improvements of cyber security, if the company is aware of where and how to deploy these best."

Exactly what these new threats might look like remains uncertain. But what is clear is that as digitalisation continues, well-designed cyber security infrastructure and proactive security management will become ever more important in all industries, not least oil and gas.



www.leidos.com/

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Politician's Corner

Claire Perry MP

Wireline sits down with Energy and Clean Growth Minister Claire Perry to learn more about Government plans for CCUS, a blueprint for UK shale gas development and the Industrial Strategy.



Q: You're not new to the energy industry, but a new Minister for oil and gas - what surprised you the most about the industry?

A: In my previous role as Climate Change Minister, I worked closely with members of the Oil and Gas Climate Initiative (OGCI). In that role I realised how important the sector was, not just to the UK's economic health, but to the global transition to a low-carbon economy. I specifically asked for the oil and gas portfolio because of what I learned as Climate Change Minister, and the relationships I had enjoyed developing with leaders in the industry and during my first week in post when I went to Aberdeen to visit the Oil & Gas Authority, the Oil and Gas Technology Centre, and the Maximising Economic Recovery Forum.

What continues to strike me is how this sector is made up of innovators and problem solvers who are ready for frank conversations about the challenges and opportunities of the future. I was also impressed with how the industry is taking positive strides to engage and employ women, especially within a new generation of engineers who will be the cornerstone of this future.

Q: So you think there's a role for oil and gas as part of the UK's future energy plans?

A: Absolutely. I believe that the oil and gas industry has a crucial role through maximising economic recovery from the UK Continental Shelf (UKCS) in supporting both the local and national economies. I also think in the longerterm gas will continue to play an integral role in our transition to a lower-carbon economy, as we move away



The CCUS Cost Challenge Taskforce Report, delivered in July 2018, proposes a range of measures and actions that will help inform CCUS deployment in the UK.

from energy sources like unabated coal. Gas can play a central balancing role with renewable technologies, and allows for longer term storage, helping to ensure the continued security of energy supply.

The UK is already one of the most successful countries at growing its economy hand in hand with reducing emissions, but we cannot be complacent. Innovative technologies such as carbon capture, usage and storage (CCUS) will be essential to decarbonise our heavy industries and could play an important role in a low-carbon hydrogen economy. The oil and gas sector will be integral to this transformation, bringing its expertise and problem-solving energy to these nascent technology challenges.

Q: Do you think carbon capture usage and storage (CCUS) is important in the future then?

A: Yes. I want the UK to become a global leader, and to work with partners from around the world to reduce costs and accelerate deployment. With our geology, the UK is naturally well-suited to storing CO2. We could become a world-leader in this exciting area, creating more highly-skilled, well-paid jobs as part of our modern Industrial Strategy. CCUS presents exciting new economic opportunities for our existing offshore oil and gas industries.

To enable the UK to lead in this area, this year I set up the CCUS Council, which I am co-chairing with James Smith (chair of the Carbon Trust and ex-chair of Shell) and the CCUS Cost Challenge Taskforce. Later this year, I will be hosting an International CCUS Conference in Edinburgh, bringing together Governments and industry to focus on how we can work together to accelerate CCUS.

Q: You recently gave the green light to the first hydraulic fracturing, or 'fracking' since 2011. Could you tell us a bit more about your thoughts on the shale gas industry?

A: I think there is a national need to explore our domestic shale gas and oil resources in a safe, sustainable, and timely way. Domestic onshore gas production, including natural gas extracted from shale reservoirs, has the potential to play a major role in further securing our domestic supplies and we should ascertain in a sober, science led way whether there is a significant resource. At scale, shale production has the potential to benefit economies both locally and nationally through the creation of well paid, high-quality jobs. I want there to be a 'UK model' of shale gas development: a model driven by innovation and the highest environmental standards, creating new UK technology providers and expertise which we could export for the benefit of the global sector.



What continues to strike me is how this sector is made up of innovators and problem solvers who are ready for frank conversations about the challenges and opportunities of the future.

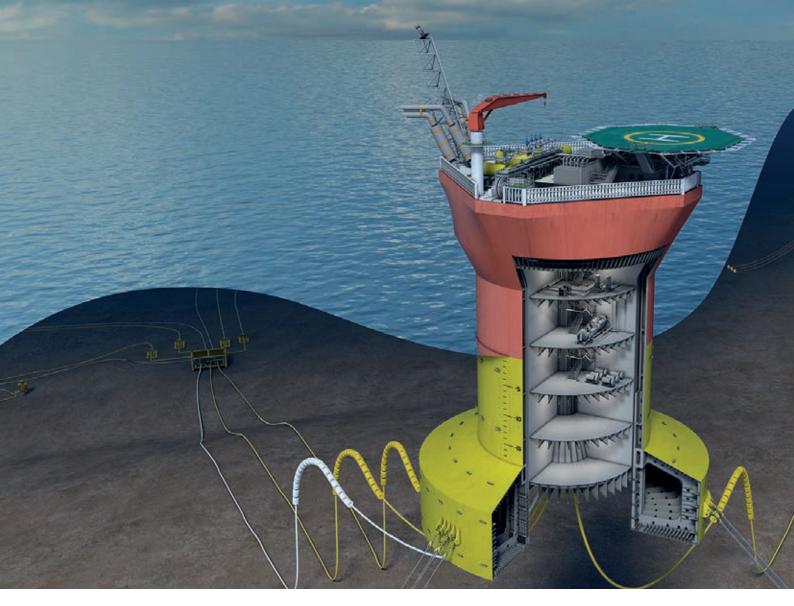


Q: Finally, what do you think are the biggest challenges for the oil and gas industry and what's your advice for how we tackle them?

A: The industry has been through some challenging times over the last few years, but there are some really encouraging signs. For example, we started this year with Shell announcing the redevelopment of the Penguins field. I am very aware that some parts of the sector, particularly the supply chain, still face significant challenges. I think the work the sector is undertaking on culture and behaviours could be key here, particularly in ensuring that the good work companies have done on cost-efficiency is sustainable. I am also very impressed by Vision 2035 and the huge potential growth opportunities this could bring. The realisation of these opportunities is arguably the biggest challenge for the sector, but also its biggest opportunity. In order to seize this opportunity, companies need to reinvigorate exploration within the UKCS. The recent launch of the 31st Offshore Licensing Round should be taken advantage of, using new sources of information and insight to help drive business performance. This is why Government provided £40 million in the 2015 and 2016 Budgets for seismic surveys in underexplored frontier areas of the UK Continental Shelf, resulting in new data and new opportunities in this latest round.

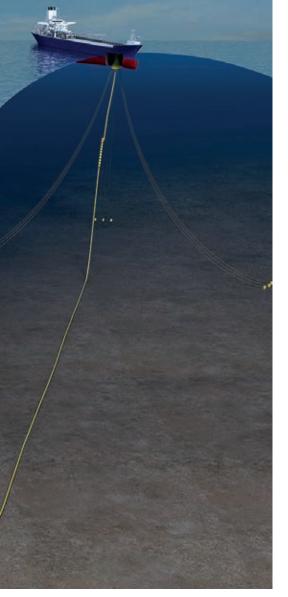
I also think attracting and retaining new skills and talent in the sector will be vital, especially as new technologies come online. This will inevitably provide the sector with an opportunity to look at how it can improve diversity, ensuring it has access to the whole of the country's talent base. A longer-term challenge closely linked to Vision 2035 is how to anchor our world-leading supply chain companies to the UK, through investment and diversification.

We already see this happening in areas such as East Anglia, with sector players moving into renewables, building new markets as part of our modern Industrial Strategy. This demonstrates how important it is to collaborate, and to regard the future as a shared opportunity. I know the oil and gas industry will relish this opportunity, and I look forward to working in partnership with the sector to deliver on its huge ongoing potential.



FUTURE PROCE

As momentum grows behind small pools development, the OGTC and Crondall Energy are pioneering a project to design and demonstrate the technology necessary to realise a low-cost, flexible and normally unmanned installation. Wireline caught up with them to learn more about the 'Facility of the Future'.



Crondall's NUI floating facility concept forms one of the key planks of the Facility of the Future study.

One of the key components of the UK Government's Maximising Economic Recovery (MER) Strategy is the development of so-called "small pools". These marginal discoveries defined as those containing technically recoverable resources of 50 million barrels of oil equivalent or less - are individually small, but collectively represent almost 3 billion boe and around £140 billion of value. Many are located close to potential tieback facilities and/or within range of extended-reach drilling from existing infrastructure. Others lying further away from existing facilities could require new, stand-alone solutions to unlock economic development.

Successfully delivering MER, and the longer-term blueprint of Vision 2035, will require new thinking and new innovations to unlock these resource pools.

The Oil and Gas Authority (OGA) has taken on a major role in co-ordinating these activities. In addition, the Technology Leadership Board (TLB) has led the Small Pools Work Group, supported by groups like the National Subsea Research Initiative (NSRI), while Oil & Gas UK's Efficiency Task Force (ETF) has examined the potential for new efficiencies in subsea installations that can be achieved through co-operation, simplified design and standardised equipment.

Aberdeen's Oil & Gas Technology Centre (OGTC) has also been pivotal. Various enabling technologies have been identified for further investigation, including mechanical hot taps, mechanically connected pipelines and spooled pipeline products. For more remote developments, solutions such as subsea storage, unmanned production buoys and smaller, more flexible floating facilities are being explored.

About a buoy

In support of these technologies, the OGTC launched the 'Facility of the Future' initiative this summer – a wideranging project to develop lower-cost, reusable, smart facilities that can be operated remotely from onshore control centres. These will harness automation and technology to reduce the requirement for people to work in the hazardous offshore environment, while creating new, skilled jobs onshore.

The core of this initiative is a multipartner study led by Buoyant
Production Technologies – a subsidiary of FPSO and subsea specialist Crondall Energy – to develop a stand-alone floating facility concept that will expand on the capabilities of normally unattended installations (NUIs), which have typically been used to develop shallow-water gas fields in the southern North Sea. The effort is co-funded by the Technology Centre and a cohort of industry partners including Premier Oil, Total E&P UK, Lloyds Register, Siemens, Wärtsilä, Ampelmann and BW Offshore.

OGTC solution centre manager for small pools, Chris Pearson, explained the impetus for the initiative: "There are unlikely to be one or two techniques which will be applicable everywhere. We're going to have to develop a portfolio of technology and applications that you can pick and mix from a toolkit that will then help you or facilitate economic development of that pool."

The Facility of the Future represents an exploration and demonstration of what that toolkit may look like, and includes work to investigate remote control and automation, processing facilities, removing water-depth limitations and how to achieve minimal manning in oil storage and offloading.

In the case of the Crondall-led study,
OGTC project manager Niki Chambers >



added: "This project is about expanding the envelope of what a NUI is, and enabling the findings to be fed out to all the companies that use these solutions."

The intention is that these outcomes will be applicable not only to a specific type of installation, but will play a key role in demonstrating the viability and reliability of NUIs in general, in the North Sea and beyond. "The project isn't just for one technology, the intention is that the learnings from this can be applied to all different solutions and could be applied to brownfield, or even fixed platforms," she added.

Floating new ideas

The study centres on a concept dating back to around 2014, when Crondall began working on designs for smaller, lower-cost floating facilities aimed at clients with marginal or smalls-scale field developments. Managing director Duncan Peace explained: "The challenge - particularly given the relatively high prices in the supply chain at that stage - was that it was difficult both commercially and technically to find a solution that worked for these smaller developments on a stand-alone basis. We also found that clients were looking at subsea developments, but they were missing some capacity or functionality, and were looking to augment some of these tiebacks."

Leveraging technology designed by its Buoyant Production Technologies unit, Crondall set about exploring how





(L-R) Crondall project manager David Steed; managing director Duncan Peace.

these cost reductions could be made. "Conceptually what we did was to look at something that was smaller and lower in capex, but crucially was unmanned so that we could reduce opex," Peace said. "This would fit in between a subsea development and a full facility standalone floating production unit."

Work on the concept continued throughout the downturn in oil prices, eventually producing a deep draught floating facility based around key novel features, several of which are now patented. Crucially, the installation is based around two structures - a floating hull and a separate deck box - that can be assembled and launched independently of each other, in water depths as shallow as five metres. This allows for flexibility in fabrication and installation, and the two components can be mated in-situ offshore without the need for a heavy lift crane vessel, all of which enables developments to proceed with greater speed, less complexity and lower capex. At the end of the life, the installation can also be easily detached, towed away, and potentially re-used.

A "back to basics" approach to topsides design also saw Crondall reduce the size and amount of process equipment - saving space, weight and cost - and lay the groundwork for the smarter systems that would enable unmanned, remote operations. Flexible process equipment can be configured to export oil by pipeline or via floating storage and offloading (FSO), while gas can also be exported or reinjected. These features also help to provide the additional functionality required by more challenging subsea developments.

In the OGTC-backed study, Crondall and its partners will explore the technological and commercial requirements for deploying the facility, based on a generic field in the northern North Sea in 150m water depth, producing around 20,000 barrels of oil per day and with a low to medium gasoil ratio.

The first phase of the project is primarily about evaluating and demonstrating to operators and the wider industry that existing technologies can enable safe, reliable NUI operation, while the second will see the project team explore the commercial and economic benefits. As Crondall project manager David Steed explained: "The scope of work is really to mature our understanding...to demonstrate what can be achieved today and what we think will be achievable tomorrow with the technology available."

NUI tieback concept



Unmanned co-operation

Identifying and evaluating these technologies has required working not only with project partners, but also with the wider supply chain. Peace added: "We're seeing a very real manifestation of [co-operation] with sponsors, and the OGTC is doing excellent work as a facilitator to help bring some of these technologies forward. For me, one of the big themes is that this is co-operation

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really working and really helping to drive new solutions."

The availability of specific expertise from project partners also aids the development process. For example, Ampelmann's experience with crew transfer technology means that when the installation does require planned maintenance, it could be provided by a platform supply vessel equipped with a walk-to-work (W2W) system. This lowers the cost of crew transfer, avoids the need for accommodation on board the installation, and should reduce the requirement for spare parts and equipment stored offshore. It's testament to the fact that small pools and NUIs will be enabled not only by digital and operational technologies, but by changes in how services and supplies are delivered.

"The theme is really about learning how to automate," Pearson added. "We can do that very easily in the southern North Sea basin with gas fields which are already well integrated with offshore renewables and have low intervention rates, but not with oil. That's the challenge, to move the technology dial and the approach, as well as the supporting systems, whether it's HSE, emergency response, gas and fire etc. They all have to advance at the same time."

Naturally, the OGTC is also intrigued by the potential gains in terms of big data and digital twins which, he says, "allow us to start from scratch and think about this virtual world that we can then build in a control room onshore, applying shift workers into that environment as we do a power station today." That will also require study into how human operators interact with these systems; Pearson links this to changes seen in the automotive industry, where automation has (in many cases) augmented rather than replaced personnel, enabling them to be more productive.

Crondall's Peace also noted that: "For us that means being able to gather the data in such a way that we start to develop leading indicators of equipment reliability and challenges, so we can plan and intervene as necessary. That allows us to simplify - and in some cases reduce - the equipment offshore."



(Above) Controlling remote assets from onshore. (Below, L-R) OGTC solution centre manager for small pools, Chris Pearson; project manager Niki Chambers.



Aspirational thinking

Small pools development of course remains challenging. Key parameters such as unit technical cost, for example, can vary tremendously depending on location, infrastructure and geology, as well as a host of other factors. However, while the Facility of the Future has no specific target in mind, Crondall and the OGTC are still driven by the need to reduce costs and find new efficiencies through innovation. "We would always look to have the lowest lifecycle or unit technical cost," noted Pearson. "That's the aspiration, and this project is a step towards realising that aspiration."

What is particularly encouraging is how effective the approach has proved to be. "Everyone has been really open to sharing their experiences and what they want from it," Chambers added. "Collaboration is used a lot at the moment, but in this instance it has been working really well."

In Peace's view, this is perhaps because they see project as instrumental in shaping the offshore industry's future. "The sponsors have been very enthusiastic and very keen to address that challenge because it has applications not only directly in the



Facility of the Future, but a wider impact on what the North Sea is going to look like in 10, 20 years' time."

Under its current, two-phase scope, the project group is set to deliver findings in Q2 2019. This may inspire additional offshoot work or investigations, but the hope is to make significant progress on closing some of the major technological gaps. Some optimistic industry timelines anticipate near-NUIs (minimally manned floating facilities) within a couple of years, while Pearson believes that the first incarnations could be in place within five.

From there, the expertise honed on the UKCS could become a global proposition, as attention turns to the roughly 27 billion barrels of similarly marginal resources scattered throughout the world, according to WoodMackenzie estimates. For Crondall, OGTC and their partners, small pools are set to hold big opportunities. @



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Supply chain reaction

Lower costs and improved competitiveness have helped improve the forecast for upstream oil and gas, but low margins and uncertainty over future activity mean the supply chain is still under pressure. Oil & Gas UK's Supply Chain & HSE Director Matt Abraham discusses ongoing work to ensure the supply chain is ready to meet renewed demand.



1-2-1 sessions at Share Fair

nyone who knows me well might be aware that archery is one of my hobbies, so in leading a team that integrates both the supply chain and HSE, it seems appropriate that I've two strings to my bow at Oil & Gas UK.

Members of our Supply Chain team are working on initiatives aimed at reviving this sector, which during the downturn endured an extremely challenging period as exploration and production companies reduced expenditure and activity levels.

Our Economic Report, published in September, warned that we're at a crossroads. On one hand, there are encouraging signs of recovery with reduced costs, competitive fiscal terms and improved operational performance. On the other, record low drilling activity means the supply chain is continuing to experience tough business conditions, with low margins and uncertainties ahead.

Our team is focused on restoring the capability and capacity of the supply chain to sustainably service this increase in demand.

Some oilfield services companies have responded by working collaboratively

to secure available business, while others are diversifying into different sectors or tapping into new overseas markets. But there are more radical changes we must implement to help businesses shift from short-term survival to long-term sustainability.

We have every reason to channel our energies into transforming this national asset to ensure it is fit for the future. It has evolved over 50 years of exploration for and development of oil and gas reserves on the UK Continental Shelf (UKCS), and it continues to broaden as companies develop new fields, access difficult-to-reach reservoirs and extend the life of mature assets, building up expertise that is highly exportable.

The supply chain contributes significantly to the UK economy and has the potential, if handled with vision and focused collective effort, to add another generation of productive life to the UKCS. It has earned global recognition for its capabilities and expertise and plays a key role in making the UKCS attractive to investors, but it is critical that we pursue and build on the cost improvements we have achieved in recent years.

This can only be achieved if we adopt a new mindset. To coin a phrase from that great thinker, Einstein: "We cannot solve our problems with the same thinking we used when we created them."

Operators and suppliers recognise the risk that inflationary cost increases could have on recovery, so what are we doing differently to ensure we develop a more sustainable business model? We're reassessing the systems we use to see how the whole supply chain operators, contractors and suppliers - can work together more effectively to maximise value from the basin, generating a healthy return for all stakeholders in the process.

Oil & Gas UK has five priority main areas for doing so.

1. Supplier Qualification System

Ensuring the supply chain successfully delivers products, works and services at the right time and at the right cost is essential to our sector's economic success. We're working across the industry to reassess and transform the systems we use to identify, evaluate >



Oil & Gas UK's chief executive, Deirdre Michie

and provide pre-qualification information about suppliers on behalf of major oil and gas businesses looking to award contracts.

We're also building on the excellent efficiency improvements delivered by the industry during the downturn both in individual companies and across the sector, where our Efficiency Task Force (ETF) continues to be a highly effective catalyst for constructive action. Collective efforts have enabled us to introduce greater standardisation, collaboration and simplification of business processes across the sector.

This new mindset is informing how we develop a new supplier qualification, certification and audit service (SQS) that is fit for purpose for buyers and suppliers on the UKCS. There's great value to be gained from removing the complexity and diversity that exists in the tendering process and establishing a single system that supports the shared aim of delivering UKCS projects and activities in a more cost-effective way.

As part of this programme of change, we are working with companies from

across the supply chain to develop a standard questionnaire that all suppliers can use when tendering for contracts. In addition, a Task Finish Group is on track to deliver a single 'capability assessment' mechanism that eliminates the need for suppliers to complete multiple submissions for separate buyers. The initial areas of focus for this industry-standard pre-qualification assessment are HSE and Quality Management. Getting this right means we could realise significant savings of up to £20 million per annum across the supply chain.

2. Share Fair

Share Fair is well established as the key market intelligence event where supply chain companies can hear at first hand from operators and major operators about their future UKCS plans and opportunities. However, more can be done to increase trust and promote the collaborative business culture which has helped generate so many of our efficiency improvements.

We've refreshed the event's format to help both suppliers and potential customers make 'connections that count' at Oil & Gas UK's flagship business development event, held

this year on 31 October at the Aberdeen Exhibition and Conference Centre (AECC).

Early engagement can help stimulate a competitive and collaborative supply chain. The recent Oil and Gas Authority (OGA) report, Lessons Learnt from UKCS Oil and Gas Projects 2011-2016, backed this up, as did the Subsea Standardisations and Simplification Project run by Oil & Gas UK's ETF. This demonstrated that early engagement could remove up to 25% of project costs through process efficiencies, reduced administration requirements and introducing alternative methods.

So, for the first time, we're working with purchaser companies to market and match their requirements for goods, works and services with the most appropriate potential suppliers.

Our aim is to ensure everyone taking part in the highly popular oneto-one business discussions has better access and more detailed information about future UKCS opportunities. We have also doubled the duration of these important engagement sessions, and we believe these changes together will help



SCCoP Gold Excellence Award winners, ConocoPhillips in 2017

both parties participate in more productive, value-driven discussions about commercial opportunities on the day.

Industry expects to spend more than £15 billion over the next year on exploring for new resources, developing them, operating existing assets and decommissioning. Making the time to meet decision-makers at Share Fair will be time well spent for any company wishing to grow its business.

We are also introducing Dragon's Den-style sessions to bring major purchaser companies together with innovators, who will be pitching their ideas for solutions to some of the industry's most pressing challenges. This will be a valuable opportunity for major buyers to hear from technology developers who can challenge convention and provide solutions that will have real impact on cost reduction and efficiency offshore.

3. The Supply Chain Code of Practice

As a set of good practice guidelines aimed at eliminating unnecessary costs, adding value and boosting competitiveness, the industry's

Supply Chain Code of Practice (SCCoP) is long established, but is it effective in meeting industry's changing needs?

Currently it is an aspirational code focusing on a three-stage structure: Plan, Contract, and Perform & Pay. Major purchasers are encouraged to share their forward work plans transparently and streamline contract pre-qualification, tendering and negotiation processes to reduce bidding costs, eliminate waste, add value and increase competitiveness.

The code encourages two-way feedback between purchasers and suppliers to improve performance and encourage prompt payment of invoices, but we can do more to reduce delays in contracting terms and payment schedules.

As the industry continues to transform itself and adopt new business models that bring suppliers and exploration and production companies closer together, we need a code of practice that promotes these changes. The ETF is playing a key role in this process and while cost reduction remains the main driver of collaboration, the focus is shifting from transferring risk to

sharing knowledge, new ideas and solutions.

We've already seen companies reaping the benefits of more direct relationships with their partners. Now is the time to develop a new SCCoP that will help accelerate the transformation and embed these new ways of working to deliver high performance in future, regardless of oil price.

4. Exports

The UK oil and gas supply chain has built a wealth of experience and is recognised as world-leading; our long-term vision is to increase our share of the global oilfield services and technology market.

Spanning the length and breadth of the UK, it supports UKCS activities and exports almost £12 billion of goods and services to other basins around the world. In the current upstream business environment, capital efficiency and operational efficiency are paramount and it's impressive to see how the oilfield services sector has transformed itself over the last three years, driving up efficiency in response to the biggest downturn for decades. >



Presentations from across the supply chain

This hard-won capability is highly marketable and our longer-term aim is to ensure the UK service sector fulfils its potential to increase its share of the global market. That's why we're involved in the first ever Energy Exports Conference to be organised by Energy Industries Council (EIC) in Aberdeen. This two-day event in June 2019 is expected to highlight over \$150 billion of worldwide project opportunities, with companies focusing on areas that specifically require UK oil and gas supply chain expertise.

5. Brexit

While we are a global industry, we have long been part of the EU. Whatever the impact of Brexit, Oil & Gas UK continues to work closely with government to ensure that the UK remains competitive and attractive to investors both during and after the negotiations.

Key priorities include maintaining a strong voice in Europe, safeguarding our licence to operate on the UKCS, protecting energy trading and the internal energy market and securing frictionless access to markets and labour. Oil & Gas UK has identified at least 12 items of new legislation/regulation that are under review

from the EU and that could impact our industry. These include, for example, the introduction of the Union Customs Code (UCC) in 2016, which replaced the Community Customs Code and brought about fundamental changes to how goods are imported from or exported to the UK Continental Shelf (UKCS).

Our Supply Chain Forum has produced a UCC information paper to provide general guidance on the UK customs import and export requirements and the topic continues to be a focus alongside industry's ongoing Brexit discussions.

We are preparing for Brexit with a sense of pragmatism, ensuring there is a greater understanding of the need for frictionless access to people, goods and services. Getting that right by removing legislative uncertainty and preventing additional costs will enable our industry to build on its hard-won achievements and maximise the economic recovery of oil and gas from the UKCS.

Making progress on these five key areas will go a long way towards restoring the capability and capacity of our supply chain.

While challenges lie ahead, there is renewed confidence in the future of the UKCS outlined in Vision 2035.

If we realise this shared ambition not only can we add a new generation of productive life to the basin, but also double the supply chain's share of the global oilfield services market.



www.oilandgasuk.co.uk/ efficiency-task-forceabout/

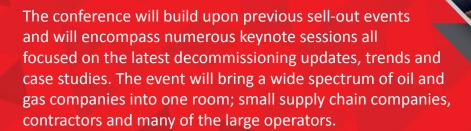
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There's no substitute for experience when it comes to supporting people of all ages as they make their way in the industry. *Wireline* explores why mentoring matters...

ECITB mentoring programme launch, March 2018



oncerns over skill shortages are frequently expressed in the oil it grapples with reduced margins, an ageing workforce and competition from other sectors. Often however, less attention can be paid to developing existing talent, whether at apprentice level, amongst graduates and new recruits, or even for those far on in their careers.

Mentoring is one method of supporting professional development and helps ensure that skills and

the next generation of personnel. As well as varied efforts made within individual companies themselves, a diverse range of organisations have embraced the principle to help individuals develop their careers – and ensure the industry has the skills and talent in place to secure its long-term goals.

The Aberdeen X-Industry Support Network (AXIS), an organisation focused on increasing gender balance in the local energy industry, is now running its second cohort in an increasingly popular mentoring scheme. The AXIS programme was launched in 2016 and the numbers involved have grown from ten pairings in each of a pilot scheme and first cohort, to 14 in the latest one. >



Sarah
Clark, who
leads mentoring
for the network, says the
programme structure not only helps
those involved pursue their career
ambitions, but supports AXIS' wider
objectives of promoting gender
balance by broadening the horizons of
everyone taking part.

She believes that mentoring, as an approach to people development, complements other forms of training. "If you go on a training course, you perhaps take about 10% of the imparted knowledge away with you," she says. "There may be resources to support that learning afterwards, but with mentoring it's continuous. You're not just being told stuff – it's more holistic, based on an exchange of views and ideas."

Exploring resources

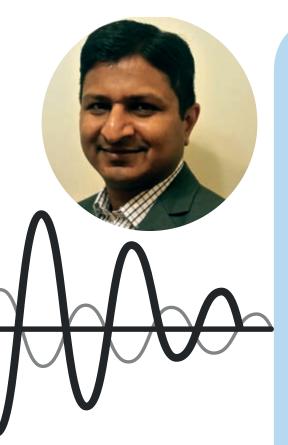
Some programmes have also been set up to aid specific disciplines. Since 2014, the Engineering Construction Industry Training Board (ECITB) has run a successful offshore project management mentoring programme that has so far brought together nearly 50 pairings.

emerged from an acknowledgment around five years ago that there was a gap in the way industry was developing its project management capabilities. Under its auspices, an offshore project management steering group was formed which in turn led to the introduction of a two-level mentoring scheme: a foundation programme for people with at least three years' background in project-related roles or following an academic route into the discipline, and a strategic programme for personnel with at least five years' experience including managing complex projects.

The programme

The ECITB uses an anonymised pairing process and development is based in part on a competency gap analysis completed by prospective mentees. "Mentoring is one of the best ways to help relatively inexperienced people who have built up their knowledge through training programmes, for example," says ECITB director of operations Andy Brown. "It provides a context for the individuals to implement that knowledge."

The fact that the programmes are independent of the workplace is beneficial too – all three eliminate



Girish Kabra, Director of Decommissioning, Spirit Energy Mentor of the Year, Oil & Gas UK Awards 2016

Why is mentoring important within oil and gas?

Mentoring is important in oil and gas, especially with an aging workforce and a shortage of key skills. The last downturn led to a number of experienced individuals leaving the industry. Meanwhile, new recruits are shying away. Mentoring career-ready interns to attract talent is key to bringing a sea-change in our industry and fulfilling the skill and age gap.

What makes a good mentor?

A mentor should be a good listener and able to extract the hidden talent from the mentee. They should make mentees comfortable and be careful that they don't feel intimidated – a good mentor should act as a sounding board and shape mentees' ideas through experience.

What do mentorships/programmes offer that is different to other training/learning methods?

Mentoring relationships can be lifelong and should be informal. Training and learning are more formal ways to enhance skills, while mentorship programmes offer a structured way of pairing relationships and regular catch-up sessions. Mentoring programmes provide a platform for different mentors to interact and share their knowledge, skills and experiences, which is equally applicable to mentees as well.

Is there a culture of mentoring in the industry? Should more be done to foster it?

The oil and gas industry – and particularly most of the operators and supply chain companies – have mentoring programmes in place that provide a platform for young professionals to interact with senior roles and hone technical and leadership skills. In a period of downturn, the importance of mentoring is even more pronounced. We are doing it, we are doing it right and I think we need to just keep doing more of it.

Are there skillsets or groups of people that need greater mentoring support from industry?

Yes, definitely there are. We see a lot of good young people are now taking alternative career opportunities and there is a general shortage of apprentices in the industry. Apprentice programmes therefore require more focus and support from the industry.

the potential constraints associated with being mentored by someone from within the participant's own business. "It's a 'safe' environment in which they can ask what they may think are stupid questions or challenge something. Sometimes their own work environment might not feel like the right place to do that," explains Andy.

Carol Sinclair, ECITB account manager for Scotland and mentoring scheme manager, says both parties in the mentor/mentee relationship can benefit from the experience. "It's about the mentor helping to guide the mentee to explore new issues and options, rather than just providing the answers," she says. "At the same time,

our
mentors
get something
out of it. They want to make
a difference; they're very passionate
about supporting new people coming
through the project management
profession."

The AXIS programme is similarly based on a confidential process of matching mentors and mentees. Each cohort runs for six-months, with the network team providing 'light touch' support if needed. >



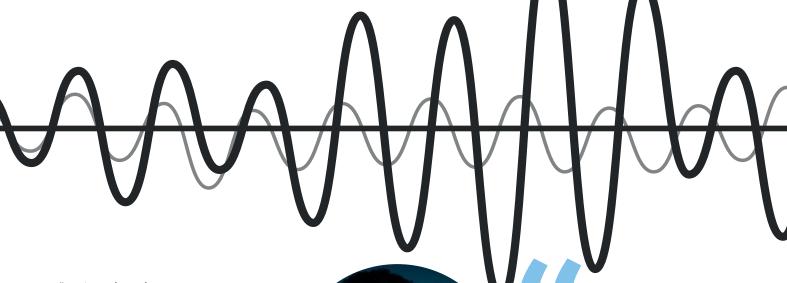
Project controls engineer Catherine Wilson joined the AXIS programme in 2017 and has remained in contact with her mentor following the initial six months.

She works for energy services firm WorleyParsons in Aberdeen and says she has benefited over recent years from "really helpful" mentorships arranged by her employer.

However, she feels an external programme offers an extra dimension of support. "At this point in my career I feel that someone with an unbiased opinion can help me to make decisions that are less business focused and more about me and my career," she says.

Catherine was aware of the programme from her participation in other AXIS events and believes it's important to take advantage of such opportunities when they come along.

Her mentor works for another company, in a department that's different from Catherine's usual work connections. "He has different experiences and knowledge," she adds. "He doesn't necessarily offer me advice; he's there to speak to whenever I want, and to guide me to come to my own realisations. It's very refreshing to have that independent support."



"We introduce them electronically and let them take it from there," says Sarah. "They choose how to run their relationship. We don't have any formal involvement at the end of the six months, but the mentoring association often carries on."

A sector in Transition

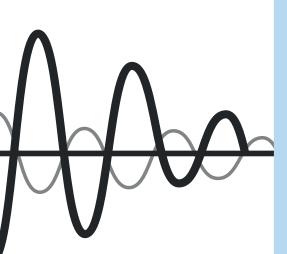
The Association for Black and Minority Ethnic Engineers (AFBE-UK), an organisation that encourages people of black and minority ethnicity (BME) to study engineering, runs programmes and activities from which mentoring relationships develop

routinely. At AFBE-UK, mentoring activities mainly revolve around a programme dubbed "Transition" which helps to prepare young people for the world of work. It's an informal setting - people have the leeway to make their mistakes there and learn from them.

Ollie Folavan

Scottish Chair Ollie Folayan says its introduction was partly fuelled by the high rates of people of BME origin graduating with an engineering-related degree but then struggling to secure a job.





The programme's centrepiece events are twice-yearly employability workshops where industry professionals work with students on mock interviews, CV reviews and assessment centres. "It's a simple format but it really works," explains Ollie. "It's an informal setting and students have the opportunity to 'fail'. In fact, that's part of the purpose – people have the leeway to make their mistakes there and learn from them."

The Transition programme has reached over 800 students in Aberdeen alone and has now been introduced at universities across the UK via the organisation's national network.

A 2016 survey indicated that over 50% of people who had taken part between

Alan Smith, Maintenance & Inspection Leader for Central Graben Operations, Total E&P UK, Mentor of the Year finalist, Oil & Gas UK Awards 2016

Why is mentoring important within oil and gas?

Mentoring is important to help develop the technical and business skills and more importantly the confidence of developing engineers. It is important for experienced engineers to pass on knowledge and experience and to provide quidance on best practices.

What makes a good mentor?

An ability to listen and to assess the needs of the developing engineer and to provide guidance on how the engineer can achieve their goals.

Is there a culture of mentoring in the industry? Should more be done to foster it?

I am not sure if there is a widespread culture of mentoring in the industry, however it should certainly be promoted as a positive thing. I have found through my career that more experienced engineers have always been keen to help and provide guidance where I have asked for help or assistance.

Are there skillsets or groups of people that need greater mentoring support from industry?

I would say that with the reduction in numbers coming through apprenticeships and graduate schemes, there are less people coming up through the industry armed with base technical hands on skills and technical knowledge. The best engineers in my experience are the ones who have started at the bottom and worked their way up.

Any advice you would give to prospective mentors and mentees?

Be open and available, be friendly, be honest, be encouraging and where negative feedback is required, ensure that this comes with feedback and positive and constructive ways to improve.

2011 and 2014 had secured a degreerelevant post within six months. The figure reached 70% over a 12-month timeframe. Even more encouragingly, 78% of all respondents believed the programme had contributed to their professional success.

Ollie says many mentorships have developed out of contacts made at the workshops. "The relationships between mentors and mentees come

as a natural consequence of their interaction – it's an organic process." He believes the close links between the oil and gas industry and professional institutions which promote the principles of mentorship help make it a significant feature of the industry landscape.

He is also confident that mentoring has a role to play in ensuring workforce continuity and supporting knowledge transfer, particularly during times when the job market is fluid and people move around more often. >

Professional Development | Mentoring

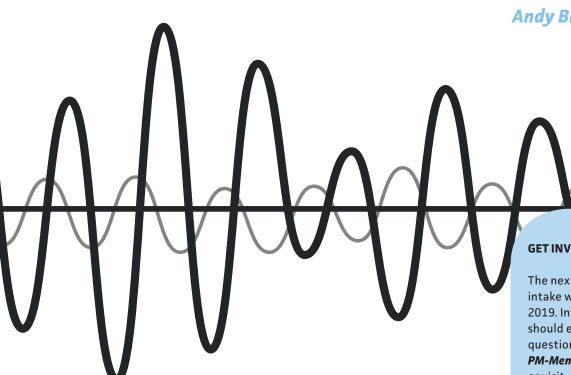
Transition is one of a series of interlinked AFBE-UK programmes that contribute to the overall mentoring culture in the organisation.

Adds Ollie: "I would certainly have liked help to prepare for the challenges I encountered in my earlier career. If I'd had a mentor, I could have had some insight into how to react to certain situations and that's a big driver for me in doing this. I didn't have that as someone starting out."



It's a 'safe' environment in which they can ask what they may think are stupid questions or challenge something. Sometimes their own work environment might not feel like the right place to do that.

Andy Brown



Giving back

Sarah believes that mentoring has taken on a higher profile in recent years, although that doesn't mean it is something that can be adopted universally. "It's a great option to have but it's not something anyone should be pushed into. You have to want to be a mentor or mentee - you need to have a passion for either passing on knowledge or benefiting from the experience of others."

The value of the programme, she says, lies in taking mentoring beyond the stereotypical approach, whereby mentors might look to help someone within their company whom they see as a younger version of themselves. That has benefits for mentors too. "It

pushes the boundaries and puts mentees together with mentors who are not just like them," she adds. "It gives them the opportunity to branch out and make it more of a rounded process."

Adds Andy: "Whether mentor or mentee, it's important to do it because you believe it's the right thing to do. That's the only way you'll make the most of your commitment. Don't do it because you feel you must or your business told you to.

"If you're a mentor, think about how your experience can shape the success of the industry. You're putting something back."

GET INVOLVED

The next ECITB mentoring intake will commence in March 2019. Interested participants should email enquiries and questions to

PM-Mentoring@ecitb.org.uk or visit

www.ecitb.org.uk/ **Project-Management/** Mentoring-Programme.

The next AFBE Transition event will be held on 16 February 2019 in Aberdeen, and in Edinburgh on March 2. Visit www.afbe.org.uk for more details.

For advice on how to get involved with AXIS, either as a mentor or mentee, email info@axisnetwork.co.uk or visit www.axisnetwork.co.uk/ mentoring.

AXIS also runs regular events with networking opportunities, where you can learn more about the AXIS Network committee.

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