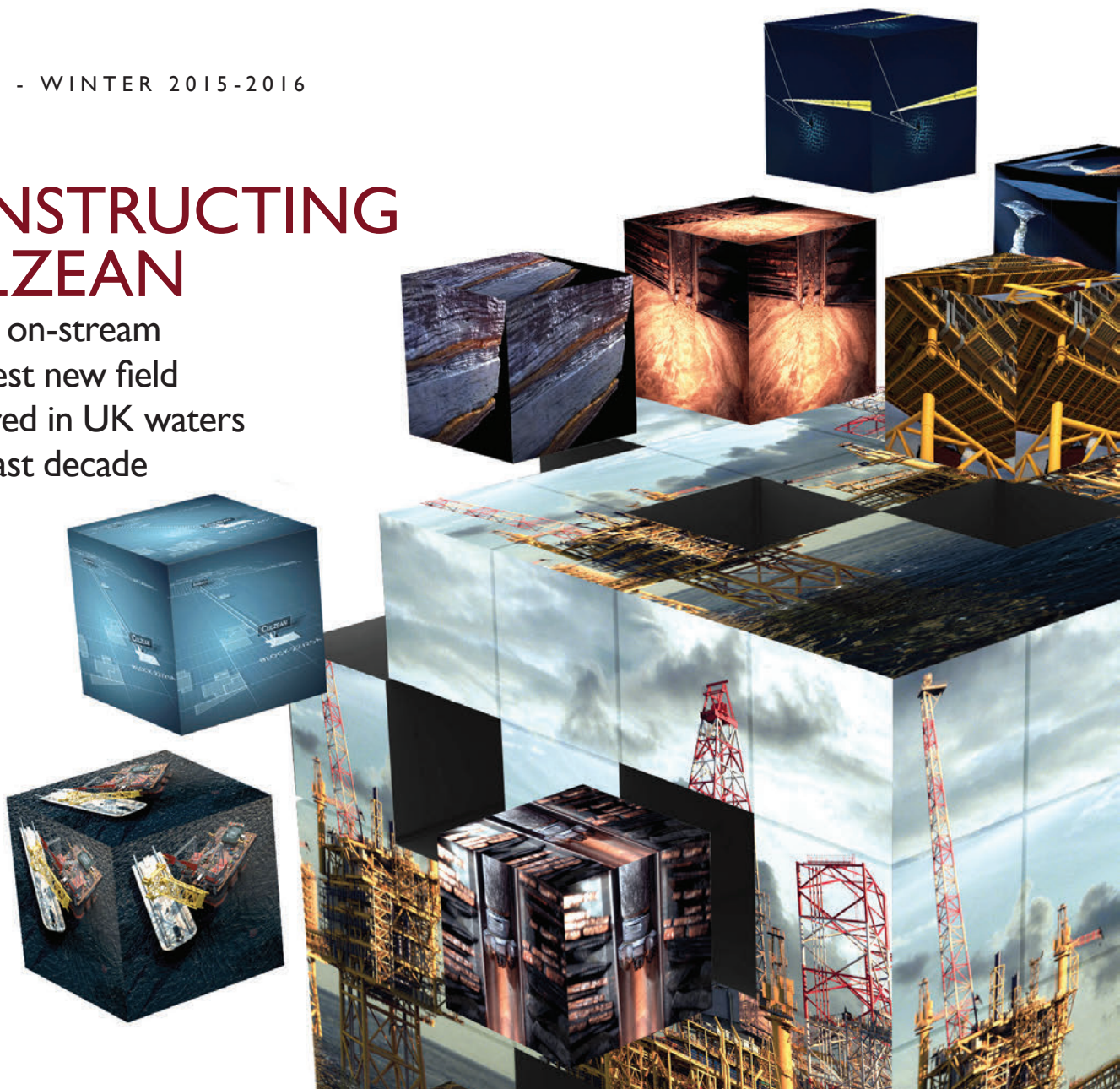


WIRELINE

ISSUE 34 - WINTER 2015-2016

CONSTRUCTING CULZEAN

Bringing on-stream
the largest new field
discovered in UK waters
in the past decade
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LOOKING TO

THE FUTURE *p32*

Why some UK supply chain companies are expanding their capabilities and expertise despite the downturn



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OIL AND GAS (GLOBAL WIDE)**

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The Oil & Gas UK Awards celebrate the achievements of the industry's most outstanding companies and inspirational people. *Wireline* reports



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As we move into the new year and look back on 2015, I believe we need to collectively keep reminding ourselves of Einstein and his oft-quoted wisdom that to keep doing the same things in the same way and expecting a different outcome is – and I paraphrase – hardly the blueprint for a successful business.

Stopping activity and cost cutting have been and continue to be levers that get pulled as companies try to manage their way through difficult times. But a positive momentum is building in terms of driving a new, more co-operative way of doing business and seeking sustainable improvements in efficiency to tackle our high cost base. It's in these areas that we need to continue to focus our efforts.

While Oil & Gas UK cannot enforce change, we seek to provide our members with the opportunities to come together to strengthen and

grow their businesses, sharing insightful knowledge and good practice. The update in this issue from our Efficiency Task Force (ETF) is just one example of that endeavour (p16), providing the vehicle for pan-industry activity. Two of the most recent key outputs of the ETF are an Efficiency Charter, a strong framework for how the industry can work together in the future, and the online Rapid Efficiency Exchange portal for sharing successful efforts and challenges in improving efficiency. Some of the company case studies we have collated are featured in the Efficiency Spotlights section of this magazine (p12).

We are extremely grateful for the support from a breadth of industry experts in steering the Task Force's activities. One of them, Mark Richardson of Apache North Sea, is featured in this issue as he discusses his alternative approach to project delivery, which he believes brings greater efficiencies and operational gains (p19).

And as we look ahead, there are certainly challenges but also cause for optimism with production increasing and costs being tackled through efficiency improvements.

The development of the technically demanding, high-pressure, high-

EFFICIENCY TASK FORCE p16

temperature, Culzean field (p26), the largest new discovery on the UK Continental Shelf (UKCS) in the past decade, is also very encouraging and reinforces that the UKCS continues to have much to offer – as does our world-class homegrown supply chain. It is heartening to still see companies investing in the UK to expand their capabilities and expertise despite the difficult climate (p32), ensuring that the domestic oil and gas supply chain continues to be strong and competitive globally.

The pioneering, highly skilled people working in this great industry have led the way over the last five decades, pushing boundaries and overcoming seemingly insurmountable hurdles. We honoured some of these exceptional people and companies at our annual Awards (p36). Let's take inspiration from their stories and together secure the future of our industry.

Deirdre Michie,
Chief Executive,
Oil & Gas UK

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I. INDUSTRY PROMOTES NEW WAYS OF WORKING

Oil & Gas UK's Share Fair event, on 5 November 2015 in Aberdeen, saw a stronger focus on tackling efficiency improvements through greater co-operation between operators and the supply chain. The event provided a platform for operators and tier 1 contractors to clearly articulate their business efficiency challenges and for suppliers to share insight and thought on how activity could be carried out in a more efficient and less costly manner. The delegates – 900 in total – were given a preview of two new tools from Oil & Gas UK's Efficiency Task Force (ETF), designed to drive improvement and cultural change within the sector: the Efficiency Charter and the Rapid Efficiency Exchange online portal (see p16 for more details and an update from the ETF).

Oil & Gas UK also announced that more companies than ever are demonstrating their commitment to improving business practices by achieving awards for their participation in the Supply Chain Code of Practice (SCCoP) scheme.

Oonagh Werngren, Oil & Gas UK's operations director, says: "It is heartening to see 26 operator and contractor companies championing the code's principles of working more effectively together to streamline processes and improve business performance. This is a great example of how our industry is rising to the challenge of becoming more competitive in a low oil price world."

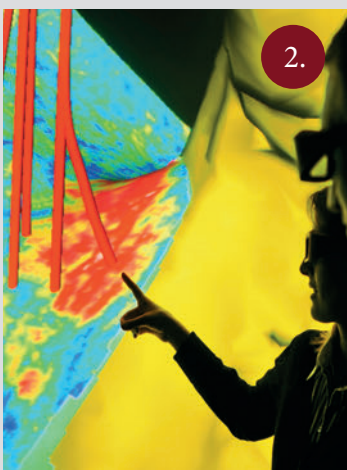
The companies that have achieved the SCCoP Award of Excellence in 2015 are:

Amec Foster Wheeler, Apache North Sea Ltd, BP, Centrica Energy, Chevron North Sea, ConocoPhillips (U.K.) Ltd, EnQuest, Fairfield Energy, Petrofac, Talisman Sinopec Energy, Technip UK Limited, Total E&P UK Limited and Wood Group PSN.

Gold awards were presented to Bibby Offshore Ltd, Nexen, Shell U.K. Limited and Stork. Companies achieving Silver awards are AGR Well Management, Aker Solutions, BG Group, CNR International (U.K.), Dana Petroleum, Halliburton and TAQA Bratani Ltd, with DEA UK and Marathon Oil U.K both earning a Bronze award.



Twenty-six companies won awards for their compliance with the Supply Chain Code of Practice (left) and over 1,000 one-to-one sessions took place at Share Fair (right). The meetings gave suppliers opportunities to hold detailed discussions with key decision-makers from around 20 operators and major contractors



2. DATA ACQUISITION PHASE OF GOVERNMENT-FUNDED SEISMIC CAMPAIGN COMPLETED

The Oil and Gas Authority (OGA) has announced the successful completion of data acquisition in the UK Government-funded seismic campaign. The £20 million programme aims to stimulate exploration interest in under-explored areas of the UK Continental Shelf (UKCS) by improving the previously sparse seismic coverage in the Rockall Trough and Mid-North Sea High regions. Commissioned by the OGA, WesternGeco has acquired almost 20,000 kilometres (km) of new 2D seismic lines over a 200,000 km² area. The latest seismic acquisition and processing technologies are used to enhance subsurface imaging and will help improve understanding of the geology and potential prospectivity of these two regions. The data will be freely available to industry in 2016.

This campaign is part of a comprehensive plan to help revitalise exploration on the UKCS. Find out more in an article on a fresh approach to exploration at <http://cld.bz/LnwOVci#15>.

3. ENVIRONMENTAL PERFORMANCE CAPTURED IN ANNUAL REPORT

Oil & Gas UK's *Environment Report 2015* captures the environmental performance of the sector via measurements of emissions to the atmosphere, discharges to sea, waste, and accidental oil and chemical releases. The report is based on the latest complete data set up to the end of 2014 and was launched at the Environmental Seminar on 25 November in Aberdeen.

Mick Borwell, environment director at Oil & Gas UK, says: "In general, overall trends in emissions, discharges and accidental releases continue to head in the right direction. This is due to a combination of careful management, significant investment in physical barriers, the provision of training in human behaviour and handling. There will always be areas where we can do better and Oil & Gas UK is working with industry to make improvements where necessary. We are also already working with our members to improve efficiency in the environmental management of operations while maintaining current levels of environmental protection."

The report is available to download at www.oilandgasuk.co.uk/environment-report.cfm.



Oil & Gas UK's Felicity Tolley (left) and Gillian Kinsella presented the report's findings at the Environmental Seminar in Aberdeen on 25 November



4. ENVIRONMENTAL LEGISLATION WEBSITE MODERNISED

The Environmental Legislation website – a free online resource provided by Oil & Gas UK for its members – has been updated to improve user experience.

Louise O'Hara Murray, environment manager at Oil & Gas UK, says: "Our Environmental Legislation website is a unique resource covering all environmental legislation related to offshore and onshore upstream oil and gas activities. The site has been running for many years, but we have just relaunched it to make it much more user friendly. At our members' request, we have also added a search facility so that visitors can find information more easily and quickly."

View the website at www.oilandgasukenvironmentallegislation.co.uk.

5. ENCOURAGING NOVEL SOLUTIONS IN DECOMMISSIONING

Oil & Gas UK and Decom North Sea have jointly published a report to provide guidance in identifying, qualifying and adopting new technologies for decommissioning assets.

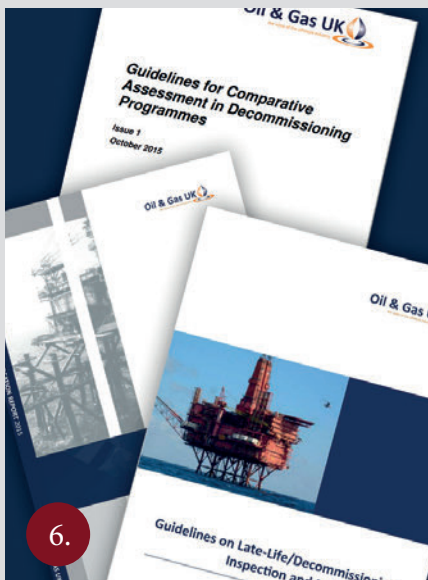
The report, *Adoption of Novel Solutions*, produced by Arup, features case studies from other sectors, including the nuclear industry. It seeks to identify the barriers that prevent adoption of novel solutions and provides recommendations on how the industry and its stakeholders, including the government and the Oil and Gas Authority, can drive innovation in the decommissioning marketplace.

Mick Borwell, Oil & Gas UK's environment director, says: "With up to 22 billion barrels still to be recovered from the UK Continental Shelf, it is widely recognised that our collective energies must focus on maximising economic recovery of our indigenous resources. This is also a key factor in ensuring there is a predictable and steady cash flow for supporting decommissioning activities as the basin matures. We are taking the initiative to help an efficient decommissioning market emerge as an intrinsic part of, and alongside, the industry's continued and sustained capital investment programme."

"By increasing collective understanding of how the sector can carry out decommissioning in a safe, environmentally sound and cost effective way by adopting novel technology, we can improve the efficiency of projects across the basin. Developing UK expertise in this area will also increase our competitive advantage and the opportunity to export skills, services and products to other maturing oil and gas provinces."

The report is available at <http://oilandgasuk.co.uk/product/op113>.





6.

6. PROMOTING EFFICIENT DECOMMISSIONING

Oil & Gas UK has released three publications to help operators and contractors plan and execute decommissioning activities more efficiently.

The *Guidelines for Comparative Assessment in Decommissioning Programmes* provide recommendations on, and encourages a consistent approach to, completing and reporting of the comparative assessment.

Decommissioning Contract Risk Allocation between Operators and Contractors – an independent study commissioned by Oil & Gas UK – was produced by Dundas Consultants. It uses a case study involving the removal of a large fixed platform with subsea tie-backs to illustrate risk allocation under different contract types, taking into account factors such as poor weather and restricted access to offshore installations.

While the *Guidelines on Late-Life/Decommissioning Inspection and Maintenance* outline good practice in making an efficient transition from late-life asset management towards cessation of production and decommissioning.

The publications can be downloaded at www.oilandgasuk.co.uk/publicationssearch.cfm.

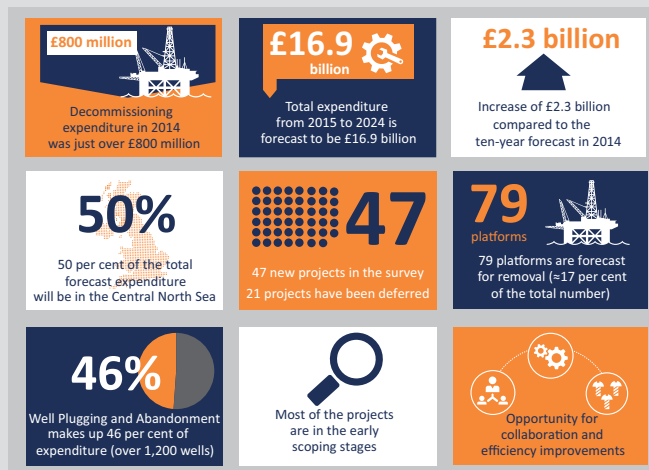
7. DECOMMISSIONING INSIGHT REPORT INDICATES STEADY GROWTH IN THE SECTOR

The *2015 Decommissioning Insight* from Oil & Gas UK indicates that the sector is growing at a steady pace (see infographics right for key findings). The total decommissioning expenditure on the UK Continental Shelf is forecast to reach

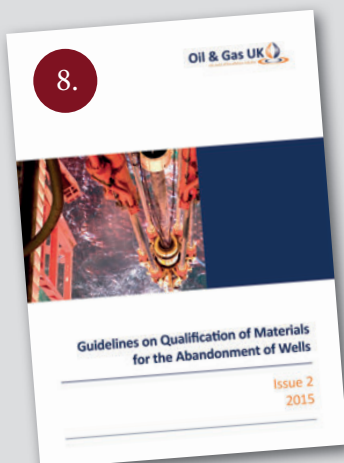
£16.9 billion over the next decade. This is an increase compared with the £14.6 billion recorded in 2014, primarily due to new projects entering the ten-year survey timeframe rather than increased cost estimates from existing projects.

Twenty-eight operator companies have responded to the survey, which has been expanded to include analysis of the oil price impact on decommissioning and information about the cost per tonne for the activities involved in making sure facilities are safe for removal. It also includes a deeper analysis of floating, production, storage and offloading vessel decommissioning projects.

The full report is available to download at <http://cld.bz/vvyZecp>.



Oil & Gas UK's Janine Jones presented the report's key findings at the 2015 Offshore Decommissioning Conference, attended by over 400 delegates from 17 to 19 November in St Andrews



8.

8. GUIDELINES ON MATERIALS QUALIFICATION FOR WELL ABANDONMENT

The second edition of Oil & Gas UK's *Guidelines on the Qualification of Materials for the Abandonment of Wells* is now available. Aimed at well operators, manufacturers and regulators, the guidelines reflect current industry expertise and are the latest in a series of publications to help well operators comply more effectively with regulations and improve cross-industry understanding of well-related issues.

Oonagh Werngren, Oil & Gas UK's operations director, says: "The industry requires all new materials proposed for deployment in well abandonment to fulfil certain criteria. This relates to all phases from development, qualification, production, storage, transport and installation. The new document demonstrates the commitment of Oil & Gas UK's wells forum to continually review and improve safety and performance in all aspects of well practices."

The guidelines are available to download at www.oilandgasuk.co.uk/product/op109/.

MEMBERSHIP MATTERS

NEW APPOINTMENTS TO THE BOARD

Oil & Gas UK has announced three new appointments to its Board. Elisabeth Proust, managing director of Total, represents the operator community, replacing Philippe Guys who has retired from Total. Neil Sims, vice president for the Europe CIS Region at Expro, represents the contractor community, replacing Doug Sedge of Sparrows Offshore Group Limited. And Tove Stuhr Sjøblom, Statoil's managing director in Aberdeen, also representing the operator community, replaces Gunnar Breivik of Statoil.

Deirdre Michie, Oil & Gas UK's chief executive, comments: "We are very fortunate to have the guidance of a talented Board. I would like to take this opportunity to thank those leaving for their commitment and service to the industry. I look forward to drawing on the experience and guidance of the new directors to further strengthen the prospects for businesses in this sector, because only co-operative working will enable this industry to become more efficient, safer and sustainable in the new business environment."



L-R: Elisabeth Proust, managing director of Total; Neil Sims, vice president for the Europe CIS Region at Expro; and Tove Stuhr Sjøblom, Statoil's managing director in Aberdeen

NEW MEMBERS JOIN OIL & GAS UK

We are pleased to welcome the following companies that have joined Oil & Gas UK since the last issue of *Wireline*:

Blackhill Engineering Services Ltd; Blaze Manufacturing Solutions Ltd; Burnett & Reid LLP; Clough UK; DataCo Ltd; Entier Limited; EPIC; Fugro EMU Limited; HBJ Gately; Independent Data Service (IDS); Onboard Global Solutions; Polaris Learning Ltd; The Chartered Institute of Procurement & Supply; and Weston Compliance Services Ltd.

Membership relationship executive, Mark Mullins, is committed to ensuring that Oil & Gas UK membership is tailored to members' needs so please contact him on mmullins@oilandgasuk.co.uk with any queries.



Oil & Gas UK runs regular members' speed networking events. Watch out for dates for 2016 on the website

OGTAP



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Dates for your diary

Raise your company's profile and be better informed about the important issues of the day by attending Oil & Gas UK's industry-leading events and training courses.

EVENTS 2016

3 to 4 February
Pitfalls, Progress and Potential – Exploration Conference
 London

23 February
Activity Survey Breakfast Briefing
 Aberdeen

9 March
Technology Showcase
 Aberdeen
Jointly organised with the Industry Technology Facilitator

27 April
The UK Oil and Gas Industry Safety Awards
 Aberdeen
Jointly organised with Step Change In Safety

1 June
Aviation Seminar
 Aberdeen

14 to 16 June
The Oil and Gas Industry Conference
 Aberdeen

2 November
Share Fair
 Aberdeen

3 November
Oil & Gas UK Awards
 Aberdeen

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Efficiency spotlights

An Efficiency Spotlights section on the Oil & Gas UK website showcases case studies from companies that are addressing costs by working smarter. *Wireline* presents just some of the good ideas being put into practice and delivering value.

PETROFAC, FAROE PETROLEUM AND ENI HEWETT COLLABORATE TO REDUCE LOGISTICS COSTS

Petrofac, Faroe Petroleum and Eni Hewett have established an innovative cost-saving partnership to drive efficiencies and commercial synergies across their UK operations in the southern North Sea. The tripartite agreement sees collaboration between Petrofac as the duty holder and the respective equity owners and operators of the Hewett, Schooner and Ketch gas fields to share logistics and accommodation services across the facilities.

Faroe Petroleum has invested in a new variant of NHV's Augusta Westland 139 helicopter, enabling an increase in passenger numbers and freight capacity. It will share usage of the helicopter with Eni Hewett.

In exchange, offshore personnel contracted to the normally unmanned Schooner and Ketch assets will stay nearby on the Eni Hewett complex rather than returning to shore each day, cutting down travel time and ensuring cost efficient mobilisation of personnel. The arrangement also allows for greater flexibility when deploying personnel, as Petrofac can mobilise its workforce, as required, across both operations.

This approach will see the partnership deliver significant cost reductions and effectively

manage resource mobilisation through a collaborative and open commercial arrangement.

Walter Thain, managing director, Petrofac Offshore Projects and Operations, says: "To deliver the greatest value for our customers, we always place a strong emphasis on cost management. The challenges we currently face as an industry are unprecedented and require us to constantly think differently and be innovative in the approach we take commercially to operations and engaging our supply chain.

"Reducing the cost of operations on the UK Continental Shelf is a collective industry responsibility and we are absolutely committed to playing our part. By delivering cost reductions and synergies safely, we benefit our customers and support a broader step change in the culture of the UK oil and gas industry."

Graham Stewart, chief executive of Faroe Petroleum, adds: "Since taking over operatorship of Schooner and Ketch last year, we have focused on a number of measures across the supply chain designed to improve operational efficiency without compromising safety, which we feel is especially relevant in this new era of low commodity prices. This arrangement is one such innovative measure, which entails the sharing of key services that will materially reduce offshore operating expenditure and improve operational efficiency."



CHEVRON UPSTREAM EUROPE ACHIEVES SMARTER WELL OPERATIONS

Chevron Upstream Europe (CUE) has improved the efficiency of its well operations and saved over £9 million in six months by defining distinct operations and performance teams and making more effective use of data.

Over the last few years, inefficient practices and a significant amount of non-productive time on the part of service providers have caused delays of several days to weeks in drilling and completions operations. Launched in October 2014, the Perfect Execution initiative aims to deliver well operations within the time and at the cost predicted. It has involved re-organising the drilling and completions group to ensure a consistent well planning structure.

For all future wells, the performance team carries out extensive historical benchmarking to identify where 'performance gaps', leading to non-productive time, have occurred in the past. Each service provider must also carry out root cause analysis on past issues and then work with CUE planning engineers to develop a well performance plan to resolve them. Progress through the plan is monitored in collaborative meetings and service providers are held accountable with the help of key performance indicators.

Improving how data are used has also been key. Simpler methods of analysing data and real time benchmarking of mudlogging data allow areas of lost time to be understood and captured more quickly to improve operational efficiency.

The efficiency drive is focused not only on CUE's existing producing fields but also applies to new projects, such as Alder, Rosebank and Captain, as well as non-rig operations.

Andy Mayeux of CUE says: "To combat the drilling delays we were experiencing, we have employed a consistent well planning process and made better use of data. The first three wells of 2015 have been completed early, we have accrued over £9 million of savings and service provider non-productive time has more than halved. Most importantly, by reducing well days, wells are being brought online sooner and additional wells can be added to the rig schedule, which ultimately helps increase production."

To maintain the workforce's engagement in the initiative both on and offshore, cross-functional well performance reviews are conducted within 30 days of drilling ending. Measures of success against the performance plan and overall well performance data are communicated daily on monitors, as well as via posters, reminding rig crews of the impact of their support to the delivery of the business plan.



TACKLING PASSENGER SIZE – SAFELY, SWIFTLY AND EFFICIENTLY

Step Change in Safety's work group made the most of existing resources to ensure new safety requirements could be met in a cost effective and safe way – avoiding the potential of industry spending millions of pounds.

The Civil Aviation Authority (CAA) published a safety review of offshore helicopter operations in February 2014. The report – CAP 1145 – contained 61 actions and recommendations to prevent helicopter incidents from happening and also improve chances of survival in the unlikely event of a ditching or crash.

CAP 1145 contained significant changes to helicopter operations – one being that the CAA had the right to prohibit helicopter operators from carrying passengers whose body size, including required safety and survival equipment, is incompatible with push-out window emergency exits.

Not long after the report's publication, industry body Step Change in Safety set up a sub-group within the Helicopter Safety Steering Group to tackle the passenger size recommendations in time for the CAA-imposed deadline of 1 April 2015. The Passenger Size work group comprised representatives from helicopter manufacturers, operators, regulators, the workforce and oil and gas operators.

Following close consultation with Robert Gordon University's Dr Arthur Stewart, it was decided that anyone going offshore would have to have their bi-deltoid (shoulders) measured before flying. Helicopter passengers with a shoulder width of more than 55.9 centimetres (22 inches) would be classed as Extra Broad (XBR) and be required to sit next to windows with a diagonal size compatible with this measurement.

Instead of opting for the traditional method of using commercial training providers to measure workers, the work group decided that offshore medics would be the primary measurers. The work group's solution caused minimal disruption to offshore operations with measurements mostly taken offshore before the deadline.

Workers did not have to pay to be measured offshore, and once the measurer had completed training and purchased the calliper required for measuring, there were no other cost commitments.

Within a month, approximately 100 people – mostly medics – had completed a specifically-designed training course allowing them to train other medics to be measurers. Armed with sliding callipers, medics began measuring workers on offshore installations in February 2015.

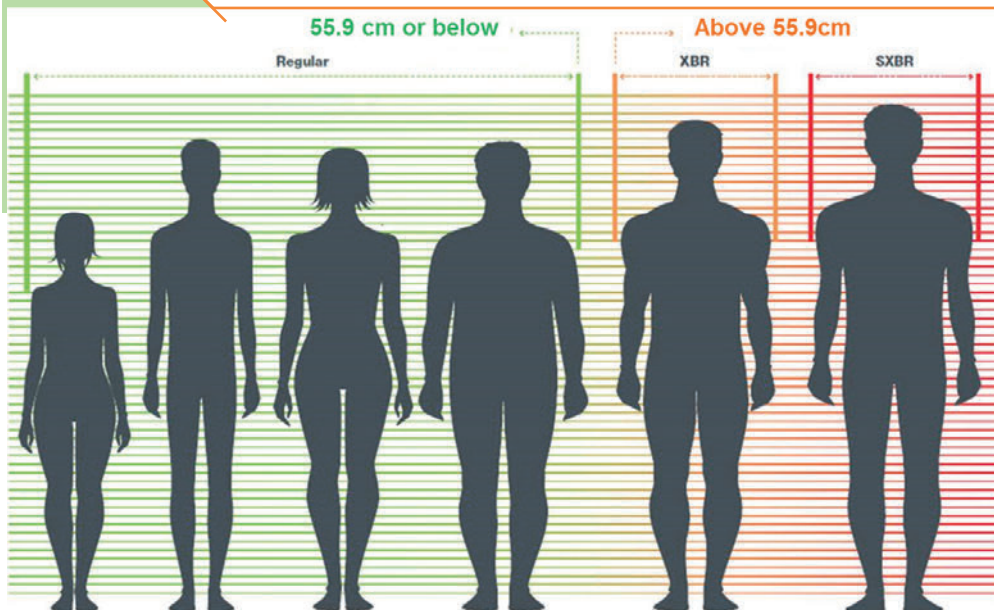
Each trainer has continued to train other people to take measurements, resulting in around 3,000 people trained to take shoulder measurements across the UK. Each trained person has measured approximately 300 people, which means that in six months, more than 67,000 people have had their shoulders measured.

The Passenger Size project meant a significant cost was avoided than if the group had gone down the traditional route of sourcing additional resource. By using an existing resource, the cost is estimated at approximately £1.1 million, where otherwise it would have been closer to £15 million.

The project was also managed by Step Change in Safety. Les Linklater, executive director of Step Change in Safety, says: "The Passenger Size work group had a huge task on their hands and the challenging oil business environment meant the solution had to be cost effective.

"Expecting companies to pay hundreds of thousands of pounds to measure shoulders simply wasn't an option, so medics were chosen to carry out the measurements as part of their offshore responsibilities.

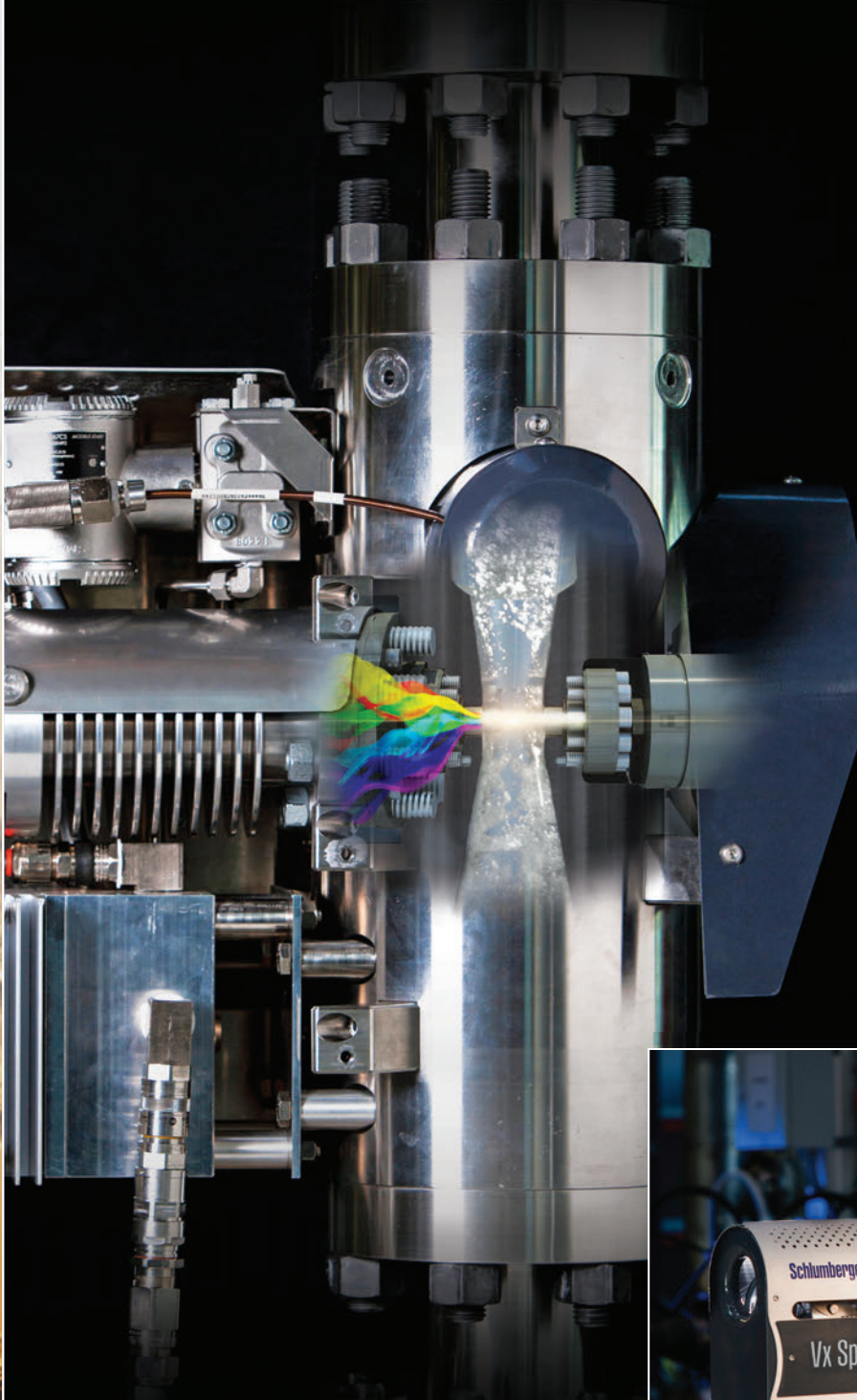
"This proved to be a bold but sensible approach. By 1 April 2015, more than 34,400 offshore workers – both core crew and less frequent travellers – had been measured. This solution is a prime example of making the most of existing resources in a sustainable, cost effective and safe way and it has saved the industry millions of pounds at a time when every penny counts."



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Schlumberger

Efficiency Task Force



Rapid Efficiency Exchange



Transformation under way

Wireline provides an update of the latest projects to come out of Oil & Gas UK's pan-industry Efficiency Task Force.

“It is good to see that there is a growing understanding that a new way of doing business has to be the way forward if we are to secure an enduring industry through this downturn.”

“We all know that our oil and gas industry is going through really tough times with high cost, low efficiency and low oil prices. But it is good to see that there is a growing understanding that a new way of doing business has to be the way forward if we are to secure an enduring industry through this downturn,” says Deirdre Michie, Oil & Gas UK's chief executive.

The association's Efficiency Task Force (ETF) aims to provide the vehicle for pan-industry activity to achieve this cultural change quickly and effectively. It comprises a group of industry experts tasked with driving improvement, making the sector more competitive and maximising economic recovery.

Efficiency Charter

At Oil & Gas UK's 2015 Share Fair event, the ETF previewed a key output of its Co-operation, Culture and Behaviours work stream – an Efficiency Charter. The Charter aims to provide a strong framework for how the industry must work together in the future. Having gained broad Oil & Gas UK Board approval, it was formally launched around the association's Annual General Meeting in December.

Laptop image © Stock.com/budo



The Rapid Efficiency Exchange online portal

campaign in 2014 saw savings of about £750,000 by reducing non-productive time offshore and avoiding material losses.

Moving ahead

As well as the Efficiency Charter and Rapid Efficiency Exchange, a host of other projects are running concurrently under the ETF umbrella.

The Share Fair event itself, in November, was recast with a stronger focus on tackling efficiency improvements through greater co-operation between operators and the supply chain. The event provided a platform for operators and tier 1 contractors to clearly articulate to the supply chain where expertise and knowledge is needed to develop projects, products and services – and for suppliers to share insight and their thoughts on how activity could be carried out in a more efficient and less costly manner.

John Pearson, group president Northern Europe and CIS for Amec Foster Wheeler, Co-Chair of Oil & Gas UK and leader of the ETF, said about the event: "We are trying to forge a path between the barriers industry is facing and the solutions I know the supply chain has."

Rapid Efficiency Exchange

In the same vein, Share Fair also saw a preview of the Rapid Efficiency Exchange, an online portal for sharing successful efforts to improve efficiency and exchanging knowledge, with the aim of being a catalyst for change across the industry. The new system comprises 'efficiency lessons', a simple dashboard of cost and safety indicators across the industry, and view of progress against ETF objectives. It is a sector first, and Oil & Gas UK is inviting the industry to not only promote what it is doing well – but share those problems that industry can tackle together.

A substantial number of companies have already taken part in developing the prototype, with around 20 good practice case studies hosted on the Rapid Efficiency Exchange from both operator and contractor companies.

For example, BP identified a basin-wide trend of hired equipment remaining offshore long after use, incurring charges for every day spent offshore. The company has therefore put in place a number of measures for improved management of hired equipment, including a new tagging system to clearly identify the equipment's status and increased collaboration between on and offshore personnel. Having been successfully implemented on one platform, this approach will be rolled out across BP's North Sea assets.

Amec Foster Wheeler's Track & Trace programme is noted for controlling and tracking the movement of materials across the globe. Track & Trace has been deployed on ConocoPhillips' Alder field, Talisman's Montrose Arbroath Area Redevelopment and hook-up and commissioning projects, and BP's Clair Ridge hook-up. A flotel

The Inventory Rationalisation project, in the Business Process work stream, sees operators looking to rationalise their inventory holdings to reduce the costs associated with the storage and maintenance of materials. Some operators have even said they want to go further by exploring the feasibility of cross-operator pooling arrangements for key high-value items.

On the Compression Systems project, also part of the Business Process work stream, six operators account for more than 90 per cent of compression system outages on the UK Continental Shelf (UKCS), impacting on production efficiency. Work is now in hand with these companies to address this issue.

Elsewhere, the Standardisation work stream is using data from extensive thru-tubing plugging and abandonment (P&A) projects in the Gulf of Mexico to provide a business case for more thru-tubing P&A on the UKCS, alongside the standardisation of subsea technology and valves, where potential savings are estimated to be in the hundreds of millions.

It is hoped that companies will get involved with the Task Force as its work gathers momentum – sharing challenges and examples of good practice. ☺



The Efficiency Charter provides a strong framework for how the industry can work together in the future



Contact the team at efficiency@oilandgasuk.co.uk



View the Rapid Efficiency Exchange portal at <http://portal.oilandgasuk.co.uk>

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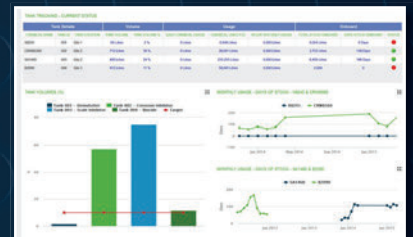
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A 'mission commanding' performance

A military principle with its roots in the 19th century has brought a trailblazing approach to project management at Apache North Sea. The man behind its introduction to the company, projects group manager Mark Richardson, says it is all about giving talented people the freedom to make decisions – and, in turn, deliver greater efficiencies and operational gains.

Mark Richardson believes the use of centralised project management stage-gate systems, where decisions are taken by a central controlling function at key project points (gates), is compromising project delivery across the UK offshore oil and gas industry. The project groups manager at Apache North Sea believes “it results in a lack of

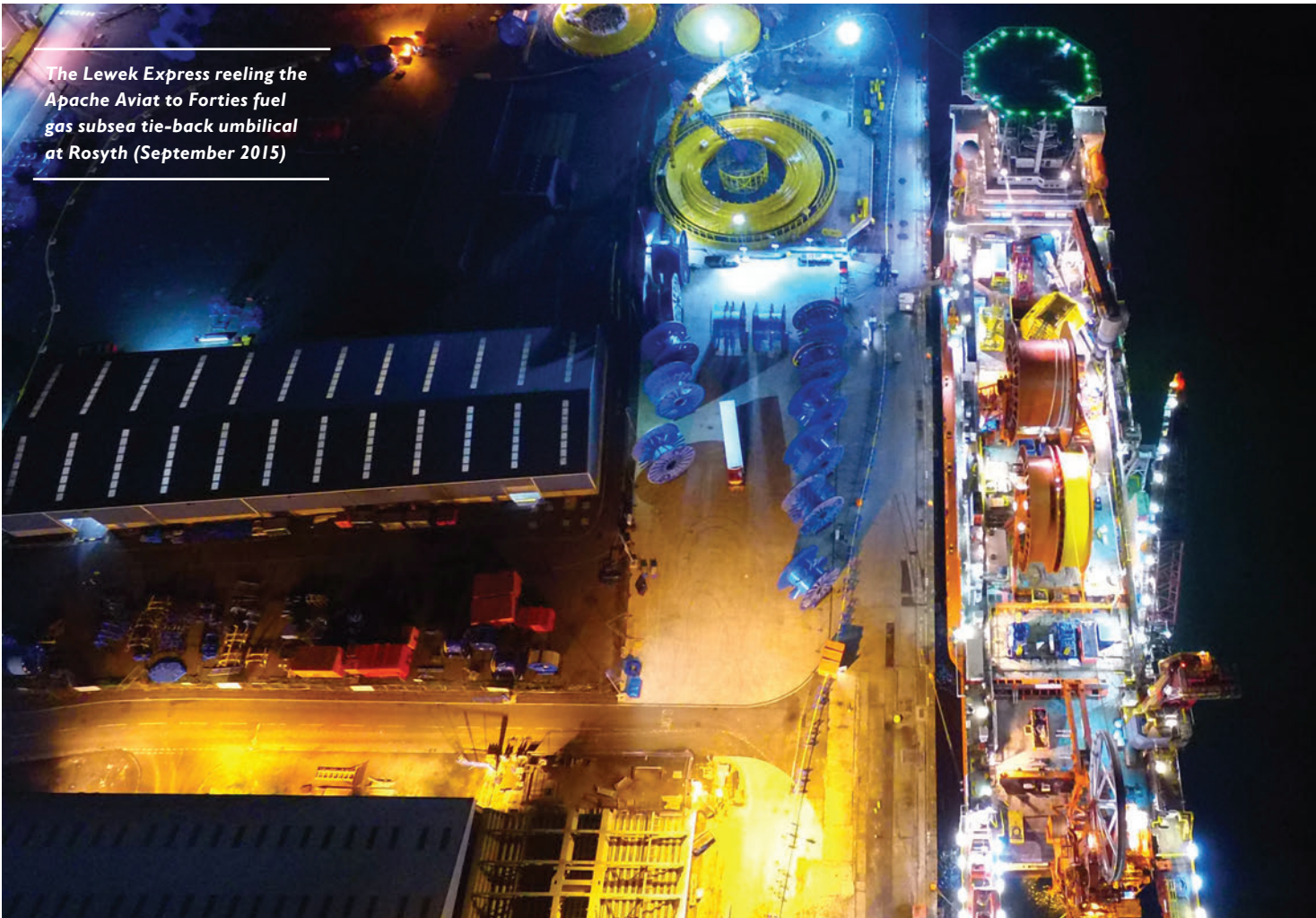
accountability for actual delivery and that, in turn, means reduced efficiency and effectiveness”.

He has shaped a different approach to project management at Apache. The Mission Command concept is an alternative to the highly process-driven systems commonly applied. In essence, Mark believes it is a methodology that

creates leaders at all levels with lean teams that can react to a probabilistic, unpredictable and dynamic environment by taking on personal responsibility and accountability for delivery through devolved decision making.

He says: “There’s an incredibly competent and highly trained >

The Lewek Express reeling the Apache Aviat to Forties fuel gas subsea tie-back umbilical at Rosyth (September 2015)



“When we benchmark our projects, we tend to come in significantly cheaper than the norm.”

workforce in the oil and gas business, but they are not always able to use their initiative and best judgement. Mission Command is a philosophy of delivery, with centralised intent and decentralised execution, that is particularly suitable for complex and fast moving projects. It demands a leadership style that promotes freedom of action and a sense of urgency. Mission Command focuses on outcomes, as it stresses the importance of understanding what effect is to be achieved, rather than specifying the ways by which it should be achieved.

“The improvement in performance you see if you trust somebody and they, in turn, know that you are supporting them. Suddenly, they absolutely flourish.”

Apache has benefitted from this brand of project management thanks

to Mark’s experiences in the Armed Forces for the first 12 years of his working life, which latterly involved being a captain in the Commando Engineers and specialising in diving operations.

Mark explains that “Mission Command in a military context is defined as ‘the exercise of local initiative within the framework of the commander’s intent’. The origins can be traced back to 19th century European military philosophy and the doctrine was adopted by NATO in the mid-1980s”.

Driving production

It was during the last six months of Mark’s military career in the mid-1990s, and as he prepared to change career by studying law at the University of Aberdeen, that he met a number of ex-military personnel working in the oil and gas industry.

He quickly realised the opportunities the sector could offer.

Instead of a law degree, he went on to gain a Masters with distinction in offshore engineering at Robert Gordon University. He then worked for several consultancy firms, gained his project management qualifications and later a Master of Business Administration, and then took on a role at BP in 2001 as projects and modifications team leader. His responsibilities at BP involved managing topsides projects on eight offshore platforms, including Forties.

When Apache acquired Forties in 2003, Mark followed suit and has gone on to play a central role as the project director in the multi-billion pound programme to significantly prolong the asset’s productive life. From the introduction of a subsea power ring main system to the installation of new generators, compressors and pipework systems – all allied to a comprehensive drilling programme – the strategy has delivered huge production gains.

“At the time of acquisition, there were 144 million barrels of oil equivalent

“Mission Command is about giving someone a clear mission, a set of resources and boundaries of authority. Unfortunately, we have an industry project culture now in which people are afraid to make decisions and instead would prefer to defer, delay or do nothing. That means things take longer and cost more.”

(boe) of recoverable reserves,” says Mark. “Since then, we have produced 235 million boe and have 97 million still on our books.

“Production, when we took over, was about 41,000 boe per day. In subsequent years that has nearly doubled at times, and, in 2014, the average daily production was 45,000 boe. We’ve taken production efficiency from 65 to over 90 per cent, the lifting costs are half the average for the North Sea and most production now comes from well stock drilled by Apache.”

It’s a success story that is replicated in the Bacchus field tie-back to the asset. Mark says: “We needed three million barrels to cover our costs for the facilities, and we now assess there to be between 16 and 20 million barrels of recoverable reserves. And, four years down the line, it is still producing 5,300 boe per day, which is an excellent performance.”

Shaping a culture

These accomplishments are testament to a project management culture

shaped by Mark, and which was given further impetus by Apache’s acquisition of the Beryl assets when it purchased Mobil North Sea in 2012.

Mark used the opportunity to form a new-look projects group, bringing together the topsides and subsea teams from both businesses. Today, it looks after everything from the concept and development of greenfield sites through to minor repair orders and large-scale brownfield upgrade programmes.

“I believe it is one of the most efficient and effective project delivery teams in the North Sea in terms of safety, speed of installation and cost,” asserts Mark. “When we benchmark our projects, we tend to come in significantly cheaper than the norm.”

This, he believes, is primarily down to Mission Command, which features a flat organisational structure and autonomous working by individual project leads. He says: “It is about giving someone a clear mission, a set of resources and boundaries of authority. Unfortunately, we have an industry project culture now in which people are afraid to make decisions and instead would prefer to defer, delay or do nothing. That means things take longer and cost more”.

Mark points out that Mission Command is a philosophy that never compromises safety. “Our record bears that out – for example, we have recently completed well over three million man-hours of topsides construction work via our engineering contractor without a lost-time incident.”

The completion and installation of the Forties Alpha Satellite Platform (FASP) in 2013 – to create more power generation and processing capacity, as well as 18 more drilling slots – is a particular high point for Mark and his team. The programme earned Apache and its key contractor, OGN, formal industry recognition with the 2013 Oil & Gas UK Award for Business Efficiency.

Apache had not built a fixed installation in UK waters before then and so the team decided that the best approach was one of partnership with a UK fabricator, OGN, in a truly integrated project. The companies

EFFICIENCY CHARTER

Mark is also playing a key role in Oil & Gas UK’s Efficiency Task Force (ETF), launched in 2015 to drive improvement, make the sector more competitive and maximise economic recovery.

As a lead of the work stream on Co-operation, Culture and Behaviours, he is working on an Efficiency Charter that sets out the principles for delivering a safe, competitive and sustainable industry (see p16 for more details).

The charter is, he believes, a significant move. “It’s one piece of a bigger efficiency picture. More thought needs to be given to technical, commercial and contractual risk, in order to reap the rewards. There is still a huge opportunity in the North Sea, which will be missed unless we collectively do something about it.”

collaborated in a programme that saw total installed platform costs at 20 per cent lower than the industry norm and the project completing significantly faster than other comparative projects.

Forties at 40

Forties turned 40 in November this year and Mark takes great pride from his association with the field – he’s one of the longest-serving onshore personnel working on the asset and believes there is still a lot of life left in this institution of the North Sea.

He won the Emerging Industry Leader award in the 2015 inaugural Press & Journal Gold Awards for his role in revitalising the Forties field and for demonstrating leadership qualities that are vital to the long-term success of the UK Continental Shelf.

He concludes: “This continues to be a great industry to work in, with some really brilliant people. But we need to ensure a unity of effort, empower and give individuals the freedom to take initiative for timely and effective decision-making, and regain a mutual, deep and enduring trust. It’s the art of delivery against the science of delivery.”^W



www.apachecorp.com/Operations/UK_North_Sea/40_years_of_Forties/index.aspx



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Politician's Corner – Energy Secretary Amber Rudd MP

Wireline asks Amber Rudd MP for her views on the UK offshore oil and gas industry and her priorities as Secretary of State for Energy & Climate Change.



Q: What's your impression of the UK offshore oil and gas industry?

A: The oil and gas industry is incredibly important for the UK – supporting around 375,000 jobs, providing secure energy for our homes and businesses, and generating billions of pounds for our economy every year, at home and through exports. It is an essential part of our plan to provide secure, reliable energy to UK homes and businesses for decades to come and we are committed to backing it.

Whilst there are challenges, the £3 billion investment by Maersk Oil to develop its Culzean discovery, announced at the end of August, demonstrates that there is plenty of life left in this vital industry. The project will create 6,400 jobs, providing financial security for more hardworking people and their families, and increasing our energy security. This is the largest discovery in the UK North Sea for a decade, proving that discoveries like this in the UK Continental Shelf (UKCS) are still possible, though there is no doubt that it's getting tougher.

There are still plenty of opportunities on the UKCS. Around 42 billion barrels of oil and gas have been produced so far, and some 20 billion more might be produced, so we need to maintain momentum. This is why we've moved quickly to implement the recommendations of the Wood Review – most importantly setting up the Oil and Gas Authority (OGA), which is already taking measures to maximise the economic recovery of the industry and ensure that we make the most of what we have in the North Sea.

Q: What are your priorities as Secretary of State?

A: My priorities are to ensure we have secure, clean, affordable energy supplies that hardworking families and businesses across the country can rely on, keep bills as low as possible and meet our climate change commitments in the most cost-effective way.

“ **The oil and gas industry is incredibly important for the UK... We are committed to backing it.** ”

This government is absolutely committed to supporting new exploration and investment in the UKCS. We must also create a competitive cost base, combatting rising operational costs and improving production efficiency to ensure the industry is as competitive as possible.

We must also take urgent action to protect critical infrastructure in order to avoid premature decommissioning and drive forward progress towards greater collaboration on decommissioning. The prize will be reduced cost and increased efficiency.

We must support the supply chain to ensure it is globally competitive. Promoting UK business and jobs is high on this government's agenda and we are committed to helping British industry win work and support jobs.

The OGA will be instrumental in delivering these priorities – that's why it's vital that we ensure the OGA is quickly established as an independent Government Company (GovCo) with the necessary powers, skills and resources to deliver.

I also wish to emphasise the importance of ensuring that the industry carries out its offshore activities with minimum impact to the environment and that the Department of Energy & Climate Change (DECC) will continue to be instrumental in making sure that effective environmental regulation can go hand-in-hand with supporting growth and productivity in the North Sea.

Q: How do you see the role of Secretary of State changing as the Oil and Gas Authority matures and becomes a GovCo?

A: The OGA will be a strong, informed and proactive steward and regulator, with the skills, experience and powers it needs to fully perform its functions. It will work closely with both government and industry, in the spirit of the tripartite approach outlined in the Wood Review, and will facilitate collaboration between operators to deliver the best results. >

I want the OGA to be a knowledgeable and influential body, and believe it will make a real and positive contribution to the success of the industry.

As Secretary of State, I will remain responsible for the overall policy framework within which the OGA operates, but I would not expect to get involved in OGA business on a day-to-day basis. We are setting up the OGA to be an independent, expert body and it is important we give it the necessary independence to do its job.

Q: Do you think government has done enough to support this industry, or is there more still to do?

A: I take very seriously the challenges currently facing the UK's oil and gas industry in the North Sea.

We acted quickly to establish the OGA as an Executive Agency of DECC in April of this year, following Sir Ian Wood's review recommendations.

Since then, we have pressed forward with urgency to take the Energy Bill through Parliament, giving the OGA the necessary powers to be an independent, proactive and informed steward and regulator.

The Chancellor introduced a strong package of fiscal measures at the March Budget to maintain and build investment. These included a reduction in the Supplementary Charge from 30 per cent to 20 per cent, the introduction of a new Investment Allowance, and a reduction in the Petroleum Revenue Tax from 50 per cent to 35 per cent from 1 January 2016.

We have also provided £20 million of funding for seismic surveying to boost offshore exploration in under-explored areas of the UKCS, which the OGA is taking forward.

Since its establishment, the OGA has been working hard with both industry and government to address the challenges presented by falling global oil prices. The OGA has been working with operators and service companies to encourage collaboration and identify opportunities to improve efficiency and reduce costs. There have been some notable examples of good industry behaviour but there is still a need for significant improvement.

The OGA is also working with groups such as the Scottish Energy Jobs Taskforce to encourage companies to consider all possible alternatives to redundancy and retain capability needed for the future.

Overall, our key aim is to ensure we have the continued long-term investment to maximise economic recovery of the UK's oil and gas resources. This will ultimately be good for the UK's energy security, good for the economy and good for jobs, providing financial security for more hardworking people and their families. I'm confident the sector will remain strong for many years to come.

“ I want the Oil and Gas Authority to be a knowledgeable and influential body, and believe it will make a real and positive contribution to the success of the industry. ”

Q: Is government support for the oil and gas industry compatible with the climate change targets you have agreed to?

A: The UK will still need significant oil and gas supplies over the next decades while we decarbonise and transition to a low-carbon economy. Projections show that in 2030 oil and gas will be a vital part of the energy mix, providing around 70 per cent of the UK's primary energy requirements. We are committed to meeting our climate change target of an 80 per cent emissions reduction by 2050. Emissions are already down by 30 per cent since 1990. But we know there is a lot more to do. We are now taking time to consider the right framework for reducing emissions in the 2020s. [W](#)



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Constructing Culzean

The largest new field discovered on the UK Continental Shelf in the past decade has been approved for development. The high-pressure, high-temperature Culzean field project signals a shared determination among all its stakeholders to maximise economic recovery of reserves with long-lasting benefits for the UK. *Wireline* reports on Culzean's story so far.

For Andy Chalmers, one of the longest-serving members of Maersk Oil's Culzean project team, the approval for field development from the Oil and Gas Authority in August 2015 was particularly rewarding. After all, Andy, a development engineer, joined Maersk Oil five years ago specifically to work on this mammoth project.

"I was attracted both by its scale and the fact that it was high-pressure, high-temperature (HPHT)," says Andy.

Located in the central North Sea, Culzean is the largest new field discovered on the UK Continental Shelf (UKCS) in the past decade, with a resource base of over 250 million barrels of oil equivalent (boe). It comprises lean gas accumulations in the Jurassic Pentland and Triassic Skaggerak standstone formations that sit deep beneath other reservoirs in the North Sea. The pressures in the Culzean reservoir of up to 13,500 psi and temperatures of around 175 degrees centigrade are equivalent to being nine kilometres underwater and the heat of an oven cooking a Sunday roast.

"It is quite amazing from a subsurface perspective, sometimes you have to pinch yourself," enthuses subsurface manager Jeppe Nygaard. "By shooting high definition ocean bottom cable [seismic] surveys, we have got a good understanding of the reservoir."

Capitalising on the lessons learnt

Culzean project director Martin Urquhart is ideally placed to take the helm as the field moves through to maturation. He has a background in project management and worked on

Total E&P UK's Phase 2 West Franklin ultra-HPHT development, as well as a portfolio of Maersk Oil's UK projects before assuming the Culzean role in May 2013.

For him, there is one important principle at work – keep it simple. He explains: "We are fortunate enough to be at a point where the lessons learnt from over 20 years of HPHT developments are now clear and visible. The key element of Culzean is deploying proven technology – we can pull in best practice."

The challenges of the environment are addressed through the wells and facility designs, which reflect best practice from the HPHT sector, influencing decisions on equipment selection, platform and drilling location, and drilling trajectory.

The wells, for example, needed to access the Culzean reservoir will have a vertical depth of more than 15,000 feet and require a complex construction to carefully manage the high pressures and temperatures.

Wells manager Andrew Lough explains: "Because of the dimensions of the wells, we are limited in the amount of wall thickness we can use to gain strength. So we need steels that are very strong."

Rapid depletion in HPHT wells, which alters reservoir geomechanics, is also a consideration in the well design, with re-drilling more common in such operations. The wellhead platform >

The £3 billion Culzean development project is expected to produce enough gas to meet five per cent of UK demand at peak production in 2020/21 of 60,000 to 90,000 boe per day



“ We are fortunate enough to be at a point where the lessons learnt from over 20 years of high-pressure, high-temperature developments are now clear and visible. ”



will have 12 slots available for the heavy duty jack-up drilling rig. All production wells will be connected to a production and test manifold rated to 15,000 psi so that the wells can be individually tested.

And because the wells run so deep, they require a “very vertical” wellhead platform jacket. It has a twisted base that allows the rig to get in close to access the well slots, optimising the loads the rig derrick and cantilever can handle during the drilling and completion processes.

Meanwhile, the bridge-linked layout of the three wellhead, central processing and living quarter platforms is designed to keep the high pressure wells far away from where employees are living and working. The wellhead platform is separated from the main central processing system by a 115-metre bridge, and the processing platform is, in turn, separated from the living quarters by another 100-metre bridge (see image on the previous page).

Orders were placed for the drilling rig and the wellhead platform jacket before Culzean was even formally sanctioned. That’s because HPHT wells take significantly longer (nine months each in this case) to drill than those in conventional reservoirs as they are deeper and more complex. Development drilling will therefore begin a number of years before the platform facilities are installed to ensure the necessary capacity for start-up in 2019, and so ramp up to production plateau can be reached as

soon as possible. Drilling on Culzean begins in quarter three 2016.

The early orders for the rig and wellhead platform jacket “were a significant pre-investment decision,” adds Martin.

Economic recovery

It was around this same period in late 2013 that crucial talks began with the UK Government to help make Culzean

“**Culzean is an important material development for the UK and project sanction in August 2015 was a great milestone for the partnership.**”

a commercially viable project that could progress towards possible sanction.

“We shared our open-book economics with HM Treasury and discussed ways that we might be able to work together to mitigate the risks, such that the project could cater for some of the downsides,” outlines Martin. “There’s no doubt the conversation was supported at the time due to the wider industry debate around collaboration and maximising economic recovery due to the Wood Report.”

The Culzean development has benefitted from the HPHT Cluster Area Allowance introduced by the UK Government in early 2015. The Allowance supports HPHT projects, which typically have

higher capital costs, and also encourages exploration and appraisal activity in the surrounding area or ‘cluster’.

UK gas...UK benefits

Now formally approved, the focus of the project team has firmly switched to execution with broad benefits for the domestic economy and energy security.

“Culzean is about UK gas to the UK market. That’s how I’ve always thought about it,” asserts Martin. The £3 billion development project is expected to produce enough gas to meet five per cent of UK demand at peak production in 2020/21 of 60,000 to 90,000 boe per day or around 300-450 million standard cubic feet per day, and to be producing for at least 13 years when it comes on-stream in 2019.

The programme will also create over 400 direct jobs domestically, with a further 6,000 in the domestic supply chain supported by the ongoing development.

Operator Maersk Oil and its co-venturers, JX Nippon and BP (Britoil), anticipate that at least half of the £3 billion capital investment will be spent with the UK-based supply chain. BP North Sea regional president, Trevor Garlick, notes that “Culzean is an important material development for the UK and project sanction in August 2015 was a great milestone for the partnership”.

Key contracts that have been awarded benefitting the homegrown supply chain include to Subsea 7 for the entire subsea scope; to TATA Steel in the UK for supplying the line pipe and coatings; and to Heerema Fabrication’s UK

CULZEAN FIELD DEVELOPMENT A £3 BILLION PROJECT



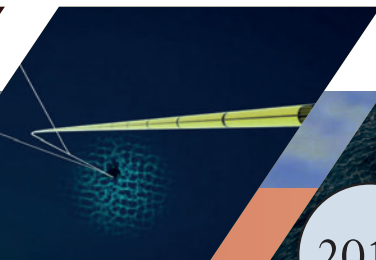
2015

The largest new field discovered in the past decade is formally approved by the Oil and Gas Authority for development.



2016

Installation of the wellhead platform jacket and heavy duty jack-up drilling rig. Drilling of the first three wells begins.



2017

The jackets for the central processing facilities and utility living quarters platforms are installed, as well as the pipelines and subsea structures that are tied into the infrastructure.



L-R: Project director Martin Urquhart and development manager Andy Chalmers believe high-pressure, high-temperature projects such as Culzean could be a significant growth area for the UK industry

Hartlepool yard, which will fabricate six pile sleeve clusters and the wellhead access deck, supporting 250 jobs in the local community. Meanwhile, topsides contractor Sembcorp has sub-let several fabrication activities for the project to its subsidiary in Lowestoft, and drilling waste and environmental services firm TWMA has been carrying out research and development for handling the drilling waste requirements. Many of the HPHT valves and fittings are manufactured in the UK, along with critical turbomachinery components, vessels and pumps.

Martin believes that the £2.1 billion to be spent on operating costs once the field comes on-stream “will be just as significant,” for UK suppliers. “As we source everything from helicopter transportation, warehousing, logistics to catering, we will do that locally. There’s a sustainable, long-term benefit for the UK in that regard.”

“ **Specific disciplines aren’t making decisions in isolation and imposing those on the project – it’s a collaborative process. When people are brought together from all functions and the impact of decisions is universally understood, that can make a crucial difference to efficiency.** ”

Efficient execution of a future production hub

Today, Maersk Oil has a dedicated team of around 100 professionals in Aberdeen working on Culzean. In light of the need to reduce the high operating costs on the UKCS, the team is mindful that the project must be executed as efficiently as possible.

“Specific disciplines aren’t making decisions in isolation and imposing those

on the project – it’s a collaborative process,” explains Martin. “When people are brought together from all functions and the impact of decisions is universally understood, that can make a crucial difference to efficiency.”

The team is also using various advanced visualisation computer-aided design tools to create an on-screen replica of the offshore infrastructure under construction, as well as a highly detailed >



2018

Topsides in place, power generation and gas compression modules installed on the central processing facility, and flare installed. Topsides are connected by bridges and the floating storage and offloading vessel is towed to location and moored. Hook-up operations commence.

2019

Hook-up and commissioning continues. Field planned to come on-stream.

2020 to 2021

Peak production of 60,000 to 90,000 barrels of oil equivalent per day anticipated, satisfying five per cent of UK gas demand.

2032

and beyond...

The field is expected to be producing for at least 13 years. The infrastructure could also be a future hub to maximise production potential from the wider Culzean cluster area.

RELISHING THE OPPORTUNITY

Culzean has presented a career opportunity of a lifetime for structural engineer Line Stenstad. Danish-born Line has worked on the project since January 2014, when she first arrived in Aberdeen for an eight-month stint as part of the global Maersk Oil graduate programme.

She has stayed on with the team after completing the graduate scheme last year, in a role supporting jacket construction.

“When you get the opportunity to work on a project like this you can’t say no,” says Line. “I’ve been very lucky in being in the right

place at the right time, and the work is absolutely amazing. It has never felt like a graduate position. It is full-on in terms of responsibility and accountability from day one.

“It’s great that industry has proved willing to place young people on such big projects – to give them the chance to learn and grow. I’m working with people who have extensive experience in this kind of development.”



representation of the facilities with a unique insight into how they will precisely operate.

Martin says: “This is informing efficient decision-making on everything from the positioning of valves to the orientation of doors and stairways. We are trying to make sure human factors are considered at every turn, and this has been essential in allowing us to do that.”

He continues: “Culzean is intended to be a truly 21st century project. It will be possible to interrogate critical equipment from onshore, as well as offshore, using fibre optic cable and electronically ‘tagged’ equipment in what’s termed an ‘advanced collaborative environment’. The aim is to have no surprises in relation to the condition of equipment and spot failure trends as soon as possible.”

For Andy, the field’s recent approval will see many years of planning and preparation become reality. Having worked initially on the feasibility and concept phases, he is now focused on Culzean’s transition to a producing asset.

“It’s great that industry has proved willing to place young people on such big projects – to give them the chance to learn and grow.”

“Much of my focus is on Culzean’s integration as an inherent part of our business,” he says. “In a project, particularly during the early phases, things tend to run in isolation. Now it’s getting a bit more real and it is crucial we are ready to bring it on board as an operating asset.”

He is also supporting an exploration team that is assessing three further prospects nearby so that Culzean’s infrastructure can be used to support and maximise future production from the cluster area.

Andy enthuses: “It has always been a great project to work on, but to be involved in a large-scale project sanctioned this year, despite the current climate, is very special.”

Developing capabilities and competencies

Both Martin and Andy believe HPHT could be a significant growth area for the UK industry. Martin says: “It is an extremely exciting and challenging project and it is encouraging for the UK industry to see a development of this size mature. We know there are HPHT prospects out there and building Maersk Oil’s capability in the UK to take on any further HPHT challenges is something I am looking to do as part of my role.

“Should we discover or acquire more, then we aim to be in a position where we have the correct competencies in place to capitalise on them.” ^W



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Looking to the future

Against the backdrop of increasingly tough conditions for industry, it is encouraging that companies are investing in the UK to expand their capabilities and expertise. This will, in turn, help the domestic oil and gas supply chain to continue to be strong and competitive globally, now and in the future. *Wireline* speaks to GE Oil & Gas, Global Energy Group and NEL to find out more.

“In a downturn, it is essential to continue to focus on delivering value for customers as it means that a business can emerge stronger in the longer term,” asserts Peter Williams, product manager at GE Oil & Gas.

GE Oil & Gas, Global Energy Group and NEL are three such companies that are developing their capabilities and expertise in important heartlands for the world-class oil and gas supply chain anchored in the UK. GE Oil & Gas opened its multi-million pound Newcastle Innovation Centre in July,

while NEL has created the UK’s only flow meter calibration facility at East Kilbride capable of testing at significantly elevated pressures and temperatures. Global Energy Group, on the other hand, has recently officially unveiled its newly refurbished deep-water quayside space in the Highlands of Scotland.

Global Energy Group's £20 million South Quay project involved re-facing the entire front quayside, as well as developing a new West Finger Jetty that is 180 metres in length. This has enhanced the company's dry dock, fabrication and laydown facilities



Strategic with subsea

As a subsea equipment supplier, GE Oil & Gas recognises that it needs to keep up with the requirements of oil and gas operations in increasingly deeper and harsher waters, which place greater loads on pipelines and risers. "At the same time, the industry is constantly striving to eliminate or reduce risk and to make existing offerings even more efficient," notes Peter.

The company's new Innovation Centre in Newcastle provides a single, centralised, advanced testing facility for its flexible pipeline operations, mimicking the conditions of the most challenging subsea environments. The site also has a firm focus on research and development (R&D) to create the next generation of flexible pipelines and risers for ultra-deep water and high-pressure, high-temperature

(HPHT) reservoirs. The R&D teams are already looking at extending the water depth capability of their large bore risers and qualifying a new polymer grade for the HPHT market.

Composite risers made from multiple layers of metallic wires and extruded thermoplastics are also being developed to offer greater physical flexibility and reduced weight for optimised and cost-effective systems in the harshest offshore environments.

"The centre not only represents ongoing investment in the subsea sector but our commitment to ensuring that we are at the forefront of technological advancement," says Peter.

"The knowledge and data the testing operations provide help us to develop and validate new and existing models,

"We took the positive step of continuing our strategy of investment, albeit appreciating the downturn in the oil and gas industry at the moment. In doing so, we firmly believe we are sending out the right messages to existing and potential customers."

allowing us to predict long-term performance in service." The centre has the technology for full-scale fatigue testing and tension cycling performance.

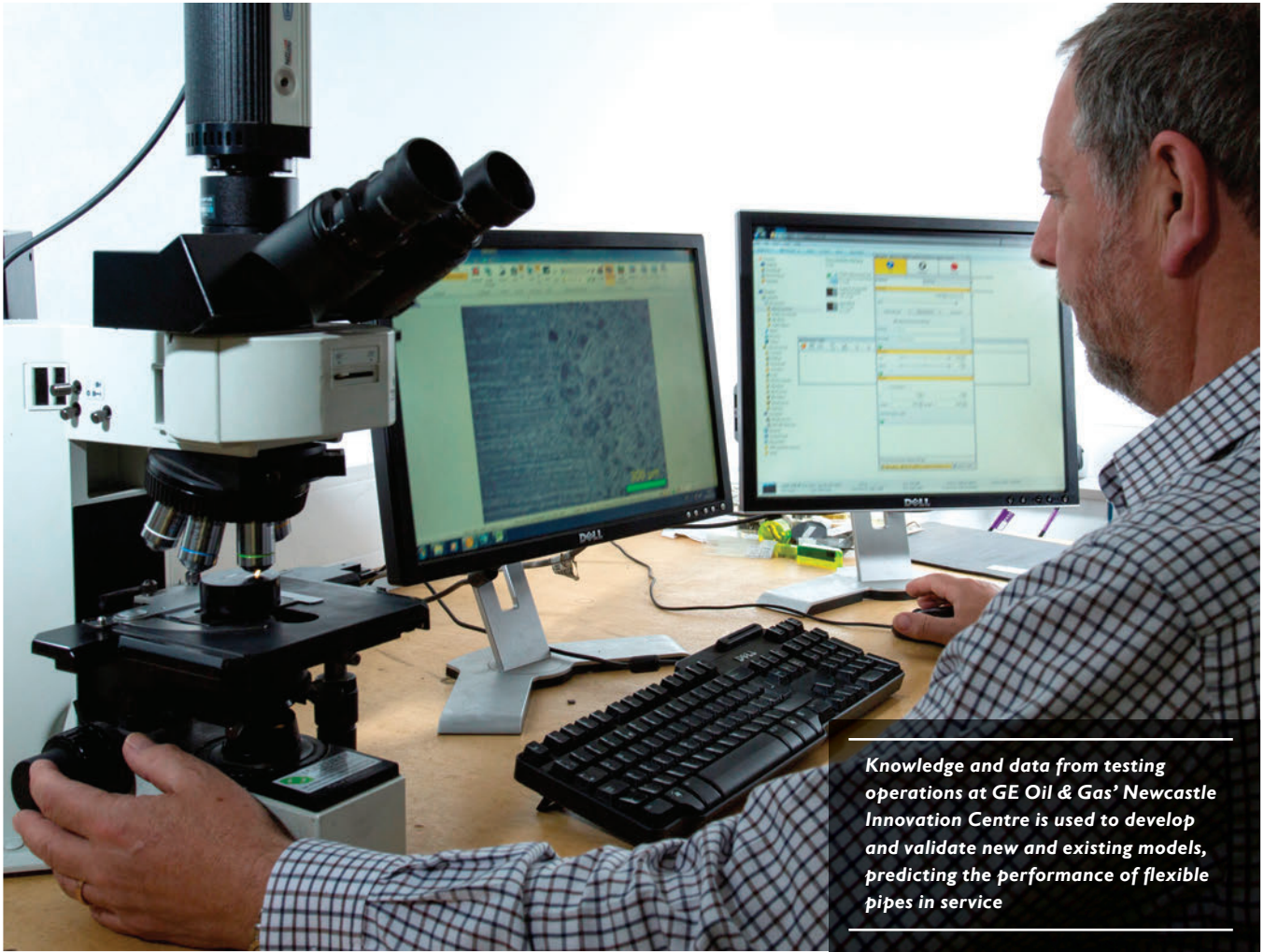
He adds: "The work we are doing here allows us to look ahead and anticipate the future challenges for the global oil and gas industry, so that our customers are prepared for new projects in the best ways possible. The entire centre was designed around this focus, driving long-term sustainability in the UK subsea sector."

The facility is located close to the company's existing manufacturing site for subsea flexibles in Newcastle, which itself has received significant levels of investment. In 2014, two new £15 million storage carousels were unveiled to meet the demand for larger diameter pipelines for high pressure wells.

In the flow

Meeting the current and future demands of oil and gas operations is also the focus for NEL as it expands its flow measurement testing capabilities in East Kilbride. The investment was supported by the National Measurement System, co-funded through the Department for Business, Innovation & Skills.

Muir Porter, group manager at NEL, outlines how the need for a new facility to calibrate flow meters was driven by industry's needs to test these meters closer to the actual pressures and temperatures of service conditions experienced in the field, and for the results of these tests to be traceable and auditable. >



Knowledge and data from testing operations at GE Oil & Gas' Newcastle Innovation Centre is used to develop and validate new and existing models, predicting the performance of flexible pipes in service

“The centre not only represents ongoing investment in the subsea sector but our commitment to ensuring that we are at the forefront of technological advancement.”

He explains: “Flow meters are the industry’s cash registers and they need to be accurate. Without them, it is impossible to ensure standardised volumes or mass quantities for trade or sale. This would impact the financial operations of a company through inconsistent cash flows for produced fluids. Additionally, without flow measurement it would be impossible to optimise operations.

Muir points out that enhancing UK capability in this area is of “particular

importance in the current economic climate and with increasing subsea processing and deeper field extraction at higher pressures and temperatures”.

He says: “There is a need now and in the future for flow meter calibration at elevated pressures and temperatures. These are the parameters with the greatest impact on meter performance. A potential impact running into many millions of pounds per annum for a single well is common.”

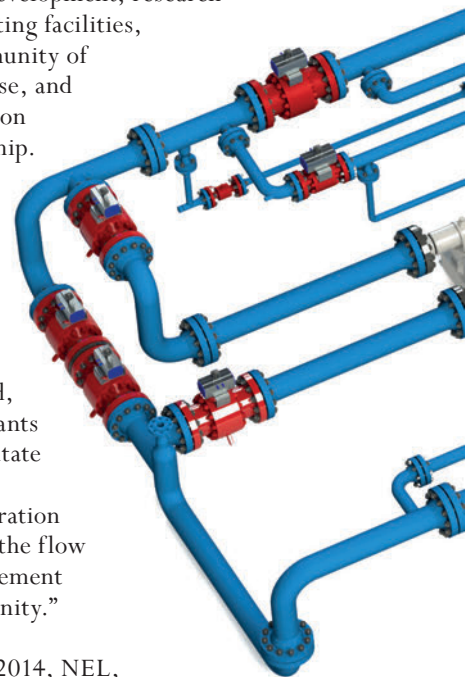
NEL’s new high pressure/high operating temperature liquid flow test loop increases the company’s pressure testing capability from below 10 bar(g) to 100 bar(g), with an ability to deal with temperatures doubling from 40 degrees Celsius maximum capability to 80 degrees Celsius.

The new facility will also carry out R&D into flow and fluid measurement. Muir adds: “Developments and investment will be industry-led for maximum impact. As part of the Flow Measurement Institute, we will help lead the creation of a tangible centre of excellence that includes

skills development, research and testing facilities, a community of expertise, and a focus on leadership.

Going forward, NEL wants to facilitate greater collaboration within the flow measurement community.”

In late 2014, NEL, along with Coventry University, founded the Flow Measurement Institute. With now over 20 members among operators, manufacturers, academia, the regulator and service companies, it responds to Sir Ian Wood’s report by driving a collaborative approach to meet the



“ **Flow meters are the industry’s cash registers and they need to be accurate... there is a need now and in the future for flow meter calibration at elevated pressures and temperatures.** ”

flow measurements needs of North Sea oil and gas companies. In doing so, it aims to propel the UK supply chain so it can continue to be at the forefront of subsea exploration and exploitation, here and overseas.

On the quayside

Collaboration is also at the forefront for Global Energy Group. Its corporate relationship director, Terry Savage, sits on Oil & Gas UK’s Board and chairs its Fabricators Forum, which aims to promote and support the development of this sector of the supply chain.

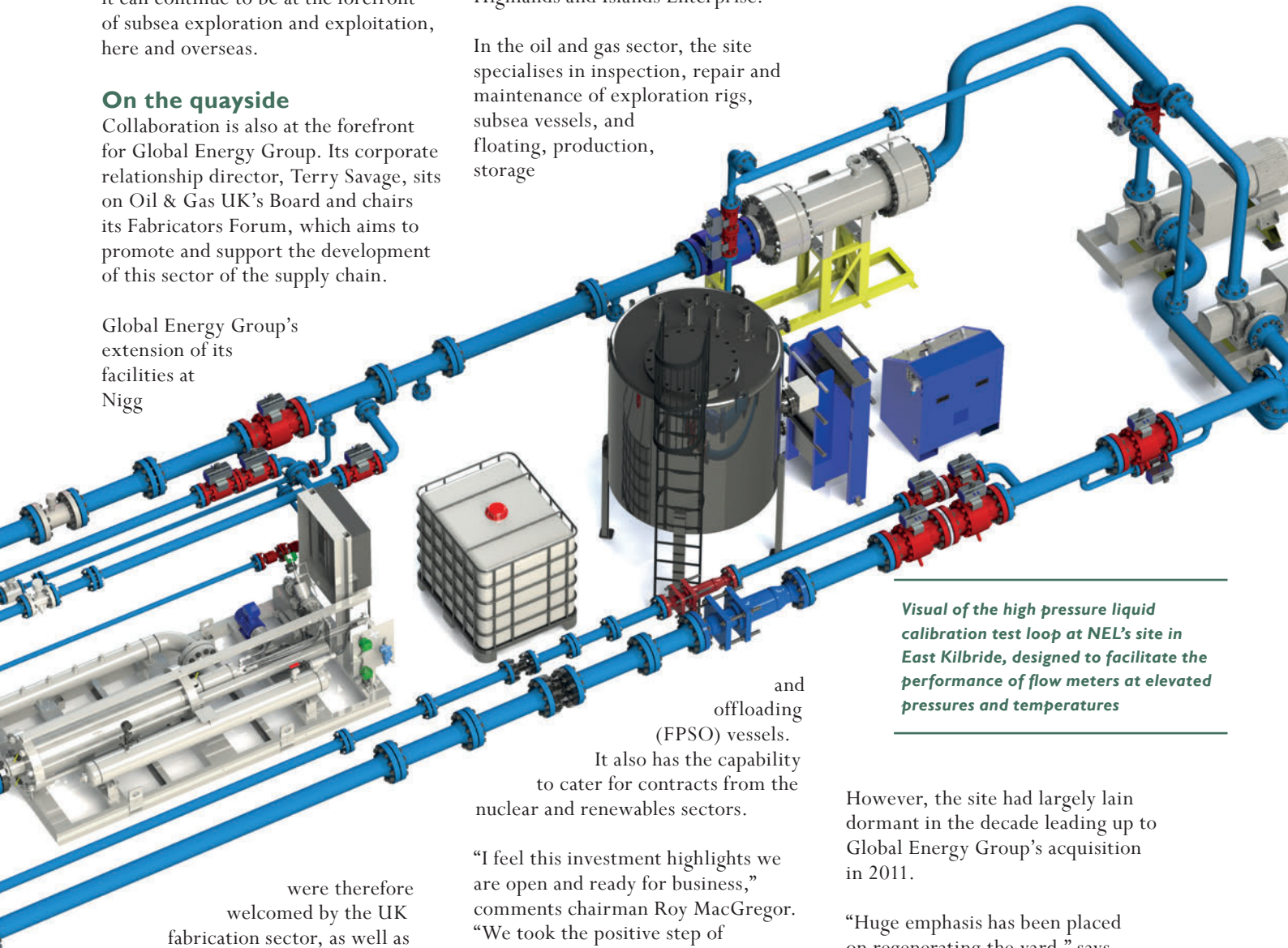
Global Energy Group’s extension of its facilities at Nigg

spend at Nigg Energy Park to over £45 million on its 700,000 square metres site, with support from the Highlands and Islands Enterprise.

In the oil and gas sector, the site specialises in inspection, repair and maintenance of exploration rigs, subsea vessels, and floating, production, storage

bolstered UK fabrication capability and, Roy says, the Port of Nigg is successfully competing for business that would have otherwise gone to Norway and Holland.

During the 1970s, the Nigg yard, which boasts one of the largest dry docks in Europe, had a workforce of around 5,000 building many of the huge structures for the oil and gas industry, which make up 40 per cent of the assets currently on the UK Continental Shelf.



Visual of the high pressure liquid calibration test loop at NEL’s site in East Kilbride, designed to facilitate the performance of flow meters at elevated pressures and temperatures

and offloading (FPSO) vessels.

It also has the capability to cater for contracts from the nuclear and renewables sectors.

were therefore welcomed by the UK fabrication sector, as well as the offshore drilling community, when it was officially unveiled in September 2015, on the occasion of the first ever Fabricators Forum meeting in the Highlands.

The £20 million South Quay project involved re-facing the entire front quayside, as well as developing a new West Finger Jetty that is 180 metres in length. This has enhanced the company’s dry dock, fabrication and laydown facilities and brings its total

“I feel this investment highlights we are open and ready for business,” comments chairman Roy MacGregor. “We took the positive step of continuing our strategy of investment, albeit appreciating the downturn in the oil and gas industry at the moment. In doing so, we firmly believe we are sending out the right messages to existing and potential customers.”

Since opening the new and improved quaysides, the business has enjoyed an upsurge in subsea construction vessels and mobile drilling rigs taking advantage of the facilities at the Port of Nigg. The development has

However, the site had largely lain dormant in the decade leading up to Global Energy Group’s acquisition in 2011.

“Huge emphasis has been placed on regenerating the yard,” says communications director Alastair Kennedy. “There is no doubt the local economy has and will continue to benefit greatly from the development of the site into a world-class facility providing new employment opportunities for years to come.” [©]



www.geoilandgas.com,
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Investment in People (SME)
– ActivityMix
(pictured Louise Shankley)



Investment in People (Large Enterprise)
– Amec Foster Wheeler
(pictured Bruce Christie)



Business Innovation (SME)
– SeaEnergy PLC
(pictured John Aldersey)



Business Innovation (Large Enterprise)
– Nexen Petroleum UK Ltd
(pictured Paul Davies)



Mentor of the Year –
Russell Morrice, BP



Apprentice of the Year –
Greig McKendry, Wood Group PSN



Graduate of the Year –
Graeme Allan, BP



Oil & Gas UK Awards 2015

The Oil & Gas UK Awards celebrate the achievements of the industry's most outstanding companies and inspirational people. *Wireline* reports

While the over 400 guests at the Oil & Gas UK Awards ceremony on 5 November 2015 were gathering in markedly different circumstances to the previous year, chief executive Deirdre Michie noted that “it remains important to take time to celebrate the great people and achievements that have made the industry a national treasure”.

She added: “This is a notable year – marking both 50 years of progress in exploration and production in the UK and also an important turning point in how we do business. While we look back with pride on our achievements over the past year, we also look forward with courage and – together – tackle the challenges we face head on.” Deirdre expressed hope that all those attending

would take inspiration from the stories showcased on the night to drive the industry forward.

Winners were presented with their awards, supported by principal sponsor Shell U.K Limited, at the ceremony hosted by the BBC's James Naughtie, presenter of Radio 4's Today Programme.

AWARD WINNERS 2015

Investment in People – SMEs*sponsored by the University of Aberdeen*

ActivityMix recognises the importance of putting people first. That's why the company launched its 'Great Place to Work' programme, which helps employees to grow while also contributing to ActivityMix's own objectives. Team strengths and group dynamics are identified and staff are given training, as well as ownership over parts of the business best suited to their skills. The company also hosts days out, including activities such as horseriding and lawn bowls, to reward hard work and promote an active lifestyle. Employee satisfaction has increased as a result.

Investment in People – Large Enterprises*Sponsored by the University of Aberdeen*

Investing in people is in **Amec Foster Wheeler's** DNA. The company offers and encourages training and development, career progression, and the chance to work in different locations around the world. It conducts regular planning for employee succession and provides mechanisms for developing high potential employees into future leaders. As a result, its training is accredited by a host of professional bodies. Despite the industry's challenges, Amec Foster Wheeler has also demonstrated that it is committed to the future by maintaining the hiring of graduates.

Business Innovation – SMEs*sponsored by BP*

High definition 360 degree spherical photography from **SeaEnergy PLC** allows operators to work with virtual representations of operating facilities from their desktop. Users can carry out detailed inspections, including those that might take place in constricted spaces, so areas requiring specific attention can be identified remotely. The software also allows users to place the documentation and permits needed to complete a job within the images, which makes the planning process more efficient. Crucially, the service allows valuable helicopter seats and bed space offshore to be reserved for operations and maintenance staff, rather than surveyors and planners.

Business Innovation – Large Enterprises*sponsored by BP*

Nexen has the capability to model highly accurate virtual well interventions by combining the technology used in the Multi Finger Caliper tool, which measures the condition of internal components within oil wells, with predictive technology. Performing virtual trial runs allows engineers to identify issues likely to arise during the well intervention and to find the optimal solution well before work begins. This ultimately reduces the time required to return the well to production.

Mentor of the Year

Russell Morrice, drilling engineering manager at BP, stands out for the time and effort he invests in the long-term development of engineers, providing professional and personal support to over 50 individuals worldwide. He challenges each engineer to take ownership of their own development with his support, encouraging them to look for opportunities to contribute to the wider team. Russell also sits on the BP WIN (Women's Network) North Sea Steering Group Committee; regularly presents to students and graduates; and participates in industry events including AXIS, the Aberdeen energy industry women's network.

Apprentice of the Year*sponsored by OPITO*

Greig McKendry, trainee electrical and instrumentation designer at Wood Group PSN, spent eight months during his apprenticeship on secondment at the BP Sullom Voe Oil Terminal on the Shetland Islands. He took responsibility for tasks normally undertaken by a junior engineer, including answering technical queries and attending client meetings. Greig also introduced a new procedure to improve the efficiency of site surveys by allowing engineering personnel visiting the terminal to give advance notice of their survey requirements, such as permits, inductions and access to restricted areas. In doing so, their time on site is much more productive.

Graduate of the Year*sponsored by ECITB*

Graeme Allan of BP has demonstrated an ability to run his own operations including projects valued at £100,000 a day. The well interventions engineer has impressed with his initiative and desire to solve problems. For example, he worked with suppliers to develop a novel solution that restores functionality to subsurface safety valves with damaged seal bores, the cause of one of BP's largest production deferrals. This has enabled several wells to be brought back into production. He then created an off-the-shelf package that now constitutes BP's preferred sealing solution and is available for the entire industry to use.

*Oil & Gas UK Awards Winners 2015*

NEW FOR 2015 – THE OIL AND GAS AUTHORITY MER UK AWARD



**Oil & Gas
Authority**

In 2015, the Awards saw an additional and relevant entry to its line-up – the Oil and Gas Authority (OGA) MER UK Award. OGA chief executive Andy Samuel presented the Awards on the evening and commented:

“We were delighted to have a very strong field for the inaugural MER UK Awards – with many great examples of companies pioneering new, more collaborative ways of working. I hope that recognising and sharing the positive behaviours of the award winners will encourage other companies to adopt these good practices and drive cultural change across the UK Continental Shelf.”



The winners of the inaugural OGA MER UK Award (far left) were presented with their trophies by OGA chief executive Andy Samuel



Changing behaviours and improving performance – Nexen

Taking inspiration from the British Olympic Cycling Team, routine tasks at Nexen have been broken down to find small efficiencies that accumulate into significant benefits and savings. Onshore and offshore teams have worked together to drive improvements and deliver impressive results, including a 30 per cent increase in offshore productivity in 2015. In addition, a significant reduction in wellhead maintenance shut-in times has delivered an additional 140,000 barrels of in-year production. Nexen is now sharing its ground-breaking approach with other operators and service companies.



Edradour and Glenlivet Field Development – Total E&P UK and DONG Energy

Recognising the risk of Edradour and Glenlivet becoming stranded discoveries, Total E&P UK and DONG Energy abandoned conventional commercial agreements to create an innovative approach that maximised overall value for both companies. They adopted a value-sharing approach that resulted in the joint development of the fields, with estimated total production of 65 million barrels of oil equivalent over the life of the fields. The companies applied a regional approach that enabled them to remove barriers and focus on maximising economic recovery.



Northern North Sea Operational Gas Group – TAQA, CNR International (U.K.) Ltd, EnQuest, Dana Petroleum, Fairfield Energy, BP, Shell UK and Esso

The companies involved in the Northern North Sea Operational Gas Group have looked beyond their own operations to see the bigger picture. Regional analysis highlighted the opportunity to share fuel gas and overcome a shortage in some areas of the northern North Sea. Under the leadership of TAQA's Pete Jones, several companies formed the Operational Gas Group, combining joint requirements to create scale and agree new commercial terms with suppliers. This highlights the commercial and operational benefits of companies working together to achieve a common goal and establishes a positive precedent for others to follow.

centrica

Hackathon – Centrica

Inspired by an innovative technique developed by the IT industry in Silicon Valley, Centrica pioneered the 'Hackathon' in its UK oil and gas operations to improve the viability of projects, unlock value and increase efficiency. Centrica's Hackathon team worked with more than 70 contractors to break down supply chain barriers and create a spirit of collaboration. With average project savings of around 30 per cent, this creative approach enabled Centrica to proceed with two previously unviable projects. The concept is now being used by others in the industry, including the Technology Leadership Board.

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