THE UKCS: COLLECTIVE CLOUT

THE WOOD REVIEW: HOW SIR IAN WOOD’S FINDINGS INFLUENCED THE UK’S 2014 BUDGET PAGE 21
Foreword from the Scottish Government

Scotland has given birth to many creative and innovative companies capable of identifying growth opportunities in overseas markets. With exports of oil, gas and petroleum worth more than £30bn in 2012 Scotland has proven to be a main player in international exports. I have met many of these companies. They are in many cases leading the world in the provision of new technologies and product solutions.

By helping the industry secure the necessary human capital and skills, by supporting innovation and technology deployment to boost recovery rates, by assisting more companies into new markets and by delivering investment in key infrastructure, Scotland’s Oil and Gas Strategy to 2020 aims to maximise future opportunities.

The government will continue to work closely with the sector to deliver excellent services, drive growth and support the ongoing success of an industry that has powered the economies of Scotland and the UK over the last 40 years, and which can continue to be a key driver of prosperity in these islands well into the century.

Fergus Ewing MSP -
Scottish Government’s Minister for Energy, Enterprise and Tourism
Foreword from the University of Aberdeen

Investment in the UK’s Continental Shelf (UKCS) reached an all-time record of £14.4 billion last year and could be £13 billion in 2014. Although much of this increase was a response to cost inflation, this high investment level shows that companies believe in the future of the UKCS. Over 20 billion barrels of oil remain to be recovered, but production has been falling sharply and exploration is at historically very low levels.

The right fiscal and licensing/regulatory regimes are crucial to increasing current recovery rates and ensuring new exploration to tap the full potential of this mature basin. Increasing exploration, discovery, and production levels will require a major effort, featuring both tax incentives and cost-reducing, productivity enhancing research and development. Implementation of the main ideas in the Wood Review is also important.

Innovation and value-adding technologies are central to Aberdeen’s role as the energy capital of Europe and a global centre of excellence in the oil and gas industry. The revitalization of the UKCS will be strengthened by new initiatives that combine academic knowledge and industrial know-how, as well as by a clear taxation, licensing, and regulatory regime.

I appreciate this initiative by Focus Reports to shed light on the key industry challenges and opportunities in the UK oil and gas sector in 2014.

Alexander Kemp -
Professor of Petroleum Economics and Director of Aberdeen Centre for Research in Energy Economics and Finance at Aberdeen
The UK Continental Shelf has been the birthplace of many of the technologies which drive exploration and production offshore around the world; and the skills and capabilities that exist here certainly represent a ‘centre of excellence’ in engineering, manufacturing and applied technology which will continue to make a significant contribution to the wider oil and gas industry’s efficiency and productivity into the future.

Oil and gas produced from the UKCS provides overwhelmingly positive benefits to the UK’s energy security, economy and employment. In the fiscal year 2012/2013, it contributed £6.5 billion in production taxes to HM Treasury and since 1970 the industry has spent over £500 billion through investing in exploration drilling and field developments, production operations and on decommissioning assets that have ceased production. In the 2014 Budget it was heartening to note that there is evidence that the government has renewed its commitment to supporting the industry in the extraction of oil and gas by reviewing the tax regime to more effectively address the challenges faced by the maturing North Sea.

Over forty years of operations to explore and extract oil and gas from the UKCS, a world-class supply chain has developed in the North East of Scotland and in strong regional hubs (centres) around the UK. This broad and diverse sector contributes £35 billion to the economy and directly employs over 200,000 skilled jobs. The human element of the oil and gas chain is that which has made it so successful in the North East of Scotland, and indeed across the United Kingdom. I welcome this publication in the Oil and Gas Financial Journal which features companies working within the oil and gas sector in the UK, and represents an account of the ongoing success of the industry, its increasing diversity and capability.

For its own part, Oil and Gas UK will continue to highlight the importance of the industry to policymakers, for the benefit of the industry and people who work in and around these valuable resources.

Malcolm Webb
Chief Executive
Oil & Gas UK
Foreword from Subsea UK

The subsea industry covers a wide range of services and technology: from Pipelines to Remotely Operated Vehicles (ROVs), the scope of the sector is considerable. In the UK, it outperforms any other industry and is now worth almost £9 billion a year.

We expect the sector to grow to over £11 billion by 2016, something that will be achieved through further expansion into emerging and existing markets. With deepwater projects underway in Brazil, the Gulf of Mexico, Africa, Australia and Asia, there are a number of opportunities open to British subsea companies looking to internationalise their business.

The north-east of Scotland has long been regarded as the test-bed for new technology and the world-leader in subsea. I welcome this report which illustrates the depth of both knowledge and expertise in Aberdeen, as well as the opportunities that lie ahead for our industry.

Neil Gordon
Chief Executive
Subsea UK
Acknowledgements:

Special thanks to Mr. Alex Salmond from the Scottish Government, Mr. Michael Fallon from the UK Government, Mr. Fergus Ewing from the Scottish Government, Prof. Alexander Kemp from the University of Aberdeen, Sir Ian Wood & Bob Keiller from Wood Group, Philippe Guy from Total, and Martin Rune Pedersen from Maersk Oil for their contribution and support as well as to all the companies involved in the production of this report.
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Supporting the total lifecycle of offshore oil, gas and renewable energy activities

- Cost efficient solution for accommodation support
- Enhanced oil recovery
- Well intervention and workover
- Well abandonment and decommissioning
- Flexible – GMS is both builder and operator, tailoring vessels to clients’ requirements
- Effective – Faster moves in-field than conventional jackups and no need for anchor handling or tug support. Fuel efficient
- The Safe Choice – proven track record of 37 years of successful operations
The UKCS

Collective Clout

Churning and tumultuous, or cold and calm; the North Sea has many moods. It can still surprise an experienced sailor hugging the coast between Aberdeen and Anstruther; it has always tested those that gain their livelihoods moving over it, fishing through it and more recently the oil pioneers searching underneath it. Whilst in recent years the industry has experienced surprising squalls of regulatory turmoil, the publication of the Wood Review on February 24th 2014, epitomizes the current quest for stability amongst policy makers and the renewed focus on collaboration. Both stability and collaboration are key to capitalizing on the UK’s remaining reserves and solidifying a sustainable oil and gas sector focused on knowledge and expertise with the potential to weather any storms the United Kingdom Continental Shelf (UKCS) has yet to face.
Alex Salmond, first minister of the Scottish Government, started his career as an oil economist. He continues to acknowledge the worth of the resource, stating: “oil and gas wealth is extremely valuable; with investment at current levels it is clear that operators have continued confidence in the future.” Fergus Ewing, the Scottish Government’s minister for energy, enterprise and tourism, sets out the Edinburgh government’s vision of Scotland as a center of innovation. He emphasizes the desire to build on relationships between Scottish universities and the industry: “The UKCS can become a test-bed for perfecting operations and technologies that can be realized all over world, whether in offshore Mexico, West Africa, the basins south of China or to the west of Australia.”

Scotland’s devolved government in Edinburgh will hold an independence referendum in September 2014: if the nation votes in favor of independence, the Scottish parliament would gain control over many issues today controlled from London. In spite of this referendum, both the Scottish and UK governments are united in emphasizing the necessity for regulatory stability to boost the UK oil and gas industry, which has been beset recently by escalating costs. Both governments are aware of their responsibility to ensure the UKCS continues to build value beyond volume of output and the role that collaboration amongst key industry stakeholders will play in this.

According to PwC, the total tax contribution (TTC) of the oil and gas industry in the UK in 2011 was over USD 46 billion representing 5.5 percent of total UK government tax revenues and underlining the industry’s importance to the country. This figure does not include taxes paid by companies in the supply chain. Clearly, finding a way to maximize the value of this sector, and ensure its long-term sustainability, is key for whoever holds the keys to the North Sea’s hydrocarbon assets. “Making the most of Britain’s home grown energy is crucial to retain job and business opportunities and the government is committed to help maximize recovery of North Sea oil and gas,” comments Michael Fallon, the UK Government’s minister of state for energy.

Malcolm Webb, chief executive of Oil & Gas UK, the industry body furthering the interests of oil and gas companies in the UK, gives an indication of where the UK government should be seeking to encourage and stimulate the industry: “Many fields on the UKCS are still being decommissioned with more oil left in situ than that which has been extracted - recovery factors can be under 50 percent - the industry should aspire to increase this figure through the application of further technology.”

There is a wide acceptance in the industry that improving production efficiency is one key step to reinvigorating the North Sea industry. “Although there is a decline in production in the UKCS, based on our current technologies we can expect a further 40-50 years of production,” says Neil Gordon, chief executive of Subsea UK, the UK subsea industry body. “So many different technologies will to come into play, such as improved seismic understanding of reservoirs. Currently, we are only at a total average recovery rate of between 30 and 35 percent on the UKCS: we have only squeezed the sponge so far and we need to look at how to squeeze it further.”

Professor Ferdinand Von Prondzynski, principal and vice-chancellor of Robert Gordon University, believes that the industry in the UK needs to look beyond the lifespan of the country’s oil and gas reserves in order to ensure that it continues to add value to the economy after the oil is gone. “The industry is still very much at the investment rather than innovation stage of economic development; and it needs a much higher level of investment in R&D,” he says. “Operators in the North Sea are introducing technological innovation to ensure enhanced oil recovery and to minimize the costs of decommissioning fields, but almost all of the innovation driving that is imported. If this industry is to have any life beyond the point at which the UKCS oilfields become too hard to manage, it needs to have a much higher value proposition than it does at the moment.” Robert Gordon University is central to the formation of a new oil and gas institute, which aims to bring much higher levels of global and industry-focused expertise into Aberdeen.
“We need to anchor the supply chain here, which we can do by having very innovative companies and there are many such companies in Scotland,” says David Rennie, international sector head, oil and gas, with Scottish Enterprise, Scotland’s main economic, enterprise, innovation and investment agency. “However, encouraging more innovative companies is essential.”

“We are seeing a whole range of showpiece offices in Aberdeen,” says councillor Jenny Laing, leader of Aberdeen City Council. “GDF Suez and EnQuest for example are currently building state-of-the-art complexes in the city. In addition Prime Four Business Park at Kingswells comprises 350,000 ft² of state-of-the-art office complexes and global training facilities for oil and gas operators. This multi-million pound business park on the outskirts of the city will accommodate energy majors such as Nexen, Apache and Transocean.” This move certainly represents a ‘vote with the feet’- suppliers and service providers acknowledging the value of Aberdeen as a hub by physically locating themselves in the granite city.

Companies moving to Aberdeen were part of record capital investment last year 2013 and significant capital investment this year 2014- expected to be around GBP 13 billion, or USD 22.06 billion, according to figures from Oil & Gas UK. The diversity of companies arriving in Aberdeen means that any investor finds a network of companies that have the skills and abilities to safely deliver profits from the increasingly challenging circumstances found in the mature UKCS basin.

**REGULATORY ROLLERCOASTER: THE DIRECTION OF TRAVEL FOR UKCS GOVERNANCE**

Andy Brogan, global oil and gas transactions leader at EY, describes the aspects that make the UKCS attractive to investors and companies: “The North Sea is under the governance of an OECD country; one of few basins where this is the case. The UK ticks boxes for having low political risk, ease of supply and provision and a safety record to be applauded.”

It is true that the UKCS has historically been under the remit of very politically stable governments, but these governments have been fickle in their implementation of tax policy. Clare Munro, partner and head of oil and gas for Brodies, differentiates between stability of government and the relative stability of the tax regime: “People speak about political and fiscal instability together despite the fact that they are different things. Whilst historically the UKCS has been politically stable, the fiscal regime in the UKCS has had serious and far-reaching changes every year for the past 15-20 years.”

In 2011, the UK Government suddenly and radically changed the fiscal regime in the UKCS, raising taxes. Since then, it has sought to row back from this by introducing successive tax allowances, for brown field sites and initiatives to the West of Shetland for example. This effort to regain the trust of the industry resulted in the publication of the Wood Review. Commissioned by the Department of Energy and Climate Change (DECC) and authored by Sir Ian Wood, the report advocated the creation of the Maximising Economic Return (MER) strategy to deliver the greatest possible level of extraction of oil and gas from the UKCS. It also advocated creation of a regulator to connect the realms of commerce and governance and improved collaboration across the industry by facilitating the wider use of hubs and shared infrastructure to lower costs and improve reclamation rates of oil.

The 2014 budget from the British Government tracked the recommendations of the Wood Review in detail. Danny Alexander, chief secretary to the Treasury, elaborates: “Reviewing the overall fiscal regime for the North Sea is something the industry has been asking the government to do for a long time. This is a big opportunity to put in place a fiscal regime that allows every last drop of oil and gas to be obtained from the North Sea.”

Sir Ian Wood himself welcomed the budget, stating it “has a different tone to any previous budget with regard to oil and gas. It embraces consultation and collaboration and includes a major review of the fiscal environment of the North Sea… In terms of the review itself, it says all...
we would wish.” Moves towards the establishment of the new regulator and towards reviewing the fiscal regime of the North Sea continue.

“An strong regulator will fast track field development and give more guidance in terms of resolving field disputes since partnership alignment can be a major issue in the UKCS” states Ewan Neilson, partner at Stronachs, a legal firm based in Aberdeen, specializing in oil and gas.

One of the key questions still to be decided with regard to the regulator is the exact remit it will have to enforce desired outcomes – like that of greater collaboration in the North Sea. The Wood Review’s goals have merit, but it is still unclear how effective a regulator will be in creating change in the sector.

The 2014 budget also introduced a measure known as the High Pressure High Temperature (HPHT) allowance, Professor Alexander Kemp, of petroleum economics and director of the Aberdeen Center for Research in Energy Economics and Finance at the University of Aberdeen elucidates how the scheme will differ from previous ones: “The new ultra HPHT allowance incorporates the idea that associated exploration could be eligible for the allowance. The new allowance conceptually is a great improvement over the previous field allowances. Basing tax policy on investment costs rather than on physical attributes, such as field size, depth of water and distance from infrastructure is prudent.” He continues: “Secondly, the new allowance will include related exploration expenditure, which is a new idea with much merit and should help to enhance our exploration activity.”

Maersk Oil and BG Group announced shortly after the budget was released that the HPHT allowance will facilitate the development of two new projects seeing potentially GBP 6 billion (USD 10.18 billion) invested across new fields such as the Culzean and Jackdaw fields in the central North Sea, owned and operated by these two companies.

The budget was a rose with thorns however, introducing a tariff for bareboat chartering. Sir Ian Wood comments: “the most negative impact of bareboat chartering is that it will dampen exploration; it is essential that this is revitalized in the North Sea. Exploration is a seed-come for the future.”

Malcolm Webb of OGUK comments on the bareboat chartering situation, stating unequivocally: “This is a mistake and we hope to see this amended following the fiscal review.” The tax could represent a 10 percent increase on day rates for newly contracted drilling rigs and accommodation vessels.

Overall, the direction of travel with regard to regulation has been positive: for example, there is now clarification on decommissioning tax relief for companies. The government guaranteed businesses a certain level of tax relief even if tax rates should change in future. Ewan Neilson comments: “Over the past few years the UK government, DECC and the industry have worked together to obtain more certainty on decommissioning tax relief for companies. Stronachs’ clients have already voiced a lot of interest in decommissioning, asking what their legal obligations are.”

Decommissioning means old plant and fields have to be mothballed or that other parties must take up opportunities to revisit decommissioned fields using new technology and innovation to exploit the remaining potential there.

VALUE BEYOND VOLUME- HOW COLLABORATION IS MOVING THE UKCS FORWARD

The supply chain in the UK is indeed flourishing, as Bob Keiller, CEO of Wood Group, international energy services company with over USD 7 billion in sales, attests: “The North Sea is still a location where good business can be done and will continue to contain opportunities for a long time.”

It is Dennis Jøl Pedersen, COO of GMS, the largest global provider of self-propelled, self-elevating accommodation jack-up barges, describes how Aberdeen has allowed GMS access to the UKCS market: “every service you can dream of, you can find in Aberdeen: if you are working on improving safety, for example, you can find the relevant analysts, consultants and experts here.”

Pedersen explains the crucial link between decommissioning and maintenance for the supply chain, stating, “Decommissioning doesn’t operate on a fixed schedule and comes largely down to costs. Frequently, it costs less money in the short-term for an operator to maintain a mothballed asset than to decommission it.” Either way, it is the engineering and equipment companies in the North Sea that will deal with the decommissioning or ongoing maintenance of the assets.

This interconnected supply chain really delivers value in the North Sea, be it toward the end of a project’s life or starting a new one: the skills and abilities inherent to this area present opportunities to reduce high operating costs and diminish risk. Without the technological capabilities of companies in this area, many of the smaller volumes of oil in this aged basin would go ignored.
The glut of companies attracted here from all over the globe adds further to the complexity and abilities of the supply chain in the UKCS. The supply chain here is globally connected; of its full GBP 35 billion (USD 59.38 billion) value in 2012, according to OGUK and EY, 42 percent of this value was derived from exports.

Rory Deans, CEO of Sentinel Marine a company running ERRVs (emergency rescue and response vessels) details the international appetite for North Sea Skills: “the prevalence of North Sea skills globally is incredible. There is frequently someone from Aberdeen working for a logistics or drilling company regardless of where that company is operating globally. They are used to the high standards in the North Sea and they are often eager to bring these quality operating practices around the world.” He comments on the implications for Sentinel Marine itself: “ERRVs tend to be unique to the North Sea but Sentinel is confident that this manner of working could have a wider role out of the North Sea.”

Companies in the North Sea often drive forward excellence by specializing. CRC Offshore handles offshore welding, inspections and coating. “CRC Evans is an incredibly innovative company,” says Adam Wynne Hughes, president of CRC Evans Offshore, a company providing equipment for offshore pipeline construction. He expands: “The automatic welding systems the business has developed are leading technologies.”

“A desire for our offshore equipment is to see it smaller and more nimble- more like a formula one car, compared to our onshore equipment which is often much more substantial. Onshore pipelines are often built as the equipment moves and the pipe remains fixed in place, whilst offshore the pipeline will be fed out from a fixed spool base or vessel.”

Hughes explains that companies can then pair these specialisms with expertise from other businesses, emphasizing how CRC Evan’s

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**Long-term Vision.**

TAQA is one of the top ten exploration and production companies working in the UK North Sea.

We’ve set our sights upon keeping things that way.

We aim to be the front-runner in safe and efficient operations and development. To grow and maintain our reserve levels. To remain a top performer.

Creating a sustainable future for TAQA in the North Sea is our vision, our plan. And we intend to see it through.

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We mean energy

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partnership with Subsea 7 has furthered their mutual interests: “Technical teams have reciprocal visits to support each other’s operations. Our business has also invested significantly to both improve customer experiences and to add to our abilities with regard to pipeline coating- we believe this will better support a broad spread of our customers.”

The supply chain in Aberdeen is differentiated; diverse and dynamic, demonstrated by the responsiveness of companies to client needs. Gary Farquhar, director of Vector, a company providing ‘single-source’ quality assured oilfield equipment, spare parts and consumables internationally, comments on recent movement of the market: “the new levels of investment are bound to translate into new opportunities. Much of the expenditure is being targeted towards hardware for the field after completion of the exploration work.”

Farquhar continues, describing the implications of this for Vector: “The rentals part of the business has experienced a big upturn because of high levels of demand. That is probably as a direct result of the increase in investment.” He reasons why the rental business is so strong in the UK: “Our rentals business is of course local whereas our other work tends to be much more global. Rentals must be local. It makes no sense to ship a small test unit to South Africa when the same unit can be acquired in regional markets.”

TAQA, Abu Dhabi’s government-controlled energy holding company, exemplifies a company actively seeking benefits from the responsive supply chain in the North Sea. Pete Jones, managing director of TAQA, expresses why working within the UK’s supply chain is so important for his company: “We are keen to be operators. There is no better place to prove your capability as an operator than offshore UKCS. It really is a badge of honor to have that capability. We are very proud of that.”

TAQA is one example of a company entering Aberdeen from abroad that are here in the UK learning to deal with a plethora of suppliers, costs driven by the market and about the need to work alongside the many other operators inhabiting the waters offshore. They are here because the diverse range of North Sea actors begets cooperation; this is useful both in the UKCS and wherever competencies developed in the North Sea are deployed.

Alasdair Buchanan, the COO/MD of Senergy, a company providing expertise and technology to assist the development and management of oil and gas fields, describes how his company is able to reach out globally from the UKCS: “our Aberdeen offices support many global operations and offer much technical support. We also have offices in Abu Dhabi, Houston, Jakarta, Melbourne, and Kuala Lumpur.”

He comments on the value that businesses established in the UK have abroad: “we can come as an independent provider of services to give NOCs and companies entering the UKCS all the skill sets they need to explore and develop an asset outside sovereign borders. They would have all the abilities within their country, but not overseas.”

One company seeking to be the embodiment of North Sea capability is Fisher Offshore. Jack Davidson, managing director of the company, a specialist supplier of engineering services to the marine industry internationally, explains: “Fisher Offshore’s strength lies in subsea excavation, subsea lifting, cranes, winches and back-deck equipment. At the moment our business is customizing subsea tools for Subsea 7 to perform a fairly critical path spool-piece removal for the Cruden Bay transfer line from the Beryls and Forties fields. It is not so much about innovation but about realistic engineering. This is about giving the client a fit for purpose engineering solution.”

“To achieve excellence in our winch and crane products, the important factor is to get close to the client and fully understand what they need, like what restrictions exist on deck space,” Davidson continues, alluding to the need for communication in the UKCS. He details the implications this customer-oriented focus has for Fisher Offshore products. “We seek to minimize our products without reducing performance. We provide solutions that are appropriate for the purpose required, within budget, easily maintained with a simple spares package. At the end of the day it is a simple product- it should not be over complicated.”

Davidson concludes, commenting on the essential nature of cooperation to guarantee successful operations in the North Sea: “It is a collaboration - Fisher Offshore’s engineers are sorely conscious of this. It is beyond a client-vendor relationship, it is a team. When a boat casts off with both Fisher Offshore and the client’s staff on it, there ceases to be a ‘them’ and ‘us.’ If there is a GBP 4 million [USD 6.79 million] ROV depending on a Fisher Offshore winch on that vessel, the winch simply has to work.”

As Davidson illustrates, the experience of North Sea companies is underpinned by their human resources- a resource notoriously high in quality but short in numbers in Aberdeen and across the wider UKCS. Senergy’s COO/MD Buchanan explains that in 2013 his company, along with the University of Aberdeen, developed an MSc petrophysics and Formation Evaluation program in direct response to the demand for petrophysicists. Some companies are responding by pairing with universities; others through creating their own training programs. Either way, they are seeking to invest in North Sea capabilities into the future.
Policy makers aim to build on relationships between Scotland’s universities and the industry to encourage the take-up of innovation. However, for Robert Gordon University, the intention is to go beyond this well-established relationship of being a partner to the industry, and lead the sector in innovation.

“If you have an economy that needs to reposition itself urgently, you need to do that with high value university initiatives,” says Professor Ferdinand von Prondzynski, principal of Aberdeen’s Robert Gordon University (RGU). “The model of university that I have worked with is to ensure that we are not service providers but an institution that takes initiative.” One example of this is the creation of an International Institute for Oil and Gas at RGU, solidifying the university’s reputation as a global leader in oil and gas-related training and research. This GBP 8 million (USD 12.8 million) oil and gas investment will secure high-value expertise for the northeast of Scotland, which will support the industry in exploiting the oil reserves in the UKCS and in building up innovation and enterprise in the supply chain.

Von Prondzynski is seen by some as one of the new breed of so-called ‘reforming’ university presidents. With ten years’ experience at the helm of Ireland’s leading business university, Dublin City University, he led a number of strategic developments including notable growth in research income (bringing in more than GBP 100 million (USD 160 million) in a decade) and initiated multiple partnership projects with the industry.

“We need to increase the value of what we do,” Von Prondzynski admits. “Whereas our previous role has principally been in training we need to move beyond that to supporting innovation.” He continues, stating that almost all of the innovation is coming from outside Scotland, but it is crucial that Aberdeen is seen globally as a source of innovation. “If this industry is to have any life beyond the point at which the UKCS’ oilfields become unprofitable, it needs to have a much higher value proposition than it does at the moment,” he concludes. The creation of the institute will attract and develop expertise in key areas such as exploration, infrastructure, regional hub development, production efficiency, improved and enhanced oil recovery and decommissioning at a critical time in the development of the UKCS.

Professor Ferdinand Von Prondzynski, principal and vice-chancellor of Robert Gordon University.

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Professor Ferdinand Von Prondzynski, principal and vice-chancellor of Robert Gordon University.

Many of the smaller companies emerging to operate smaller or partially depleted fields are using in-house specialisms. Wayne Kirk, technical director of Atlantic Petroleum, an exploration and production company, explains the importance of staff to smaller businesses: “many of the exploration wells drilled in the UK are being sunk by smaller companies. Some of the ideas developed in large companies have drifted into smaller businesses as the human resources, the creative forces behind these ideas, have moved themselves.”

In the North Sea, approximately 42 billion barrels of oil equivalent (boe) have been produced and a further estimated 12 to 24 billion boe are potentially available, according to DECC. Whilst this means there are still significant resources to be acquired, they are ever more difficult to obtain: as stated in the Wood Review, production has fallen by 38 percent between 2010 and 2013.

Kirk explains how smaller companies can gain access to the stranded oil in the North Sea by “envisaging a means to access that oil cost-effectively.” Innovation, driven by the creative forces that Kirk describes, is driving the UKCS’s abilities to capture this remaining oil and both small and large companies need to remain proactive in driving forward new solutions to succeed. Aberdeen in particular is a strong-point for this innovation, as illustrated by Scott Campbell, UK business strategy manager for Technip, a business delivering engineering, project management and construction which has its UK headquarters for subsea operations in Aberdeen. “The company
ENDURING PERFORMANCE

Dennis Jul Pedersen, Chief Operating Officer of Gulf Marine Services (GMS) highlights the opportunity that exists for his business supporting maintenance operations in the North Sea, commenting that “spending on operations at mature oil fields reliably increases year on year.”

“The present asset life extension project we are supporting with the GMS Endurance in the North Sea is exactly what we came here to do. This is a project we are very proud of and is precisely what we built our self-propelled jack-up barges for; the project demonstrates well that our concept works.”

The GMS Endurance contract, originally signed in 2012 with a duration of two years, was GMS’ first oil and gas contract in the North Sea and saw GMS’ E-Class jack-up barge provide accommodation services to ConocoPhillips’ operations in the Southern part of the North Sea.

These E-Class barges can accommodate 150 persons, have dynamic positioning capabilities and are capable of moving faster than conventional barges. They have a large deck space, crane capacity and accommodation facilities that can be adapted to the requirements of the group’s clients. These vessels support GMS’ clients in a broad range of offshore oil and gas platform refurbishment and maintenance activities, well intervention work and offshore wind turbine maintenance work (which are opex-led activities) and offshore oil and gas platform installation (as a capex-led activity).

Pedersen comments on the company’s presence currently: ‘We hope to have one more jackup barge arriving in the North Sea in the third quarter of 2014. It will be a higher specification than the two we have currently working here, with higher crane capacity and longer legs.’

The platforms GMS has been working on in the North Sea have mostly been located at depths of 40-50 meters, to the south or in shallower waters. Whilst our existing jack-up barges are capable of covering most of the platforms on the UKCS, but in the future, we will need larger vessels for use in deeper water.

Lastly, he sums up future plans for the business: ‘we are building a further four smaller jack-up barges, two of which we plan to bring to the UK in 2015 as there is considerable demand in the UKCS. We have a substantial backlog of contracts - a good position to be in.’
is still assisting the wider industry push boundaries—by going deeper or providing more sophisticated solutions,” he explains. “Total Islay utilized the first electrically trace heated pipe in the world. This solution delivered by Technip had never been previously tried.”

There is a clear reason for this high capability: at the moment, the North Sea is reaching into ever more difficult to access resources and expertise is needed to bring oil and gas to the surface from ever more complex reservoirs at a reasonable price. Many of these reservoirs’ complexities mean better information about the assets is required to guarantee and maximize economic recovery.

“Statoil recognizes that informed risk is key to success in exploration,” says Tom Dreyer, vice president exploration of Statoil in the North Atlantic. Dreyer emphasizes what drives the Norwegian state oil company’s success, stating it “has been very focused on the best possible seismic data, using our expertise and obtaining the best possible subsurface image. This is then utilized to inform our drilling programs.”

Martin Bett, senior vice president, reservoir solutions at TGS, a company delivering the full spectrum of exploration and reservoir monitoring technologies, describes what permanent monitoring systems (PRM) can do to inform operators about the reservoir they are dealing with: “PRM systems look to observe the dynamic elements of the reservoir, such as water pressure or movement of fluids within the reservoir. One desires the highest resolution imaging; placing a PRM system on the seabed offers access to this information in full azimuth – this is an image from multiple perspectives.”

He concludes, summarizing what this data means to the industry: “These remote sensing efforts allow improved decisions to be taken by the oil and gas industry. This increased information has improved exploration and now can be turned to production and improving decisions in that aspect of work as well. Measuring, not just modeling, is key to this forward step. Oil companies pursue a number of scenarios when they are drilling wells. These wells are so expensive that having the knowledge to maximize the return from any well is vital; that, or actually deciding if a profitable scenario is likely.”

Philippe Guys, managing director of Total E&P UK, emphasizes that this data is so valuable, it entirely influences the business’ operations: “If our geoscientists provide geological data, which demonstrates prospect of discovering commercially viable and exploitable reserves we will go for it.” This is corroborated by Martin Pedersen, vice president and managing director of Maersk Oil North Sea, who states: “First and foremost it is about technical knowledge and
Being able to identify and de-risk the prospects.”

Identifying and de-risking new and alternative prospects is seeing companies devise innovative new means of accessing resources. Robert Trice, CEO of Hurricane, an exploration and production company, is searching for fractured basement reservoirs—effectively where natural geological movements have fractured the rock, creating spaces in which hydrocarbons may pool. “Finding the fractured basement areas is the easy part of the process; one is looking for large structures that have the normal components of a trap: reservoir, seal and source. The principal challenge is evaluating the reservoir from a modeling point of view, calculating porosity, fracture density, fracture orientation and water saturation—these are the key aspects which must be investigated. Hurricane has its own bespoke technique for this in-house.”

Hurricane identified areas of basement around the UK where reservoir, seal and source were consistently present, and cross-referenced this with sites where existing drilling had taken place and oil has been located in the basement or sediment. As a result, this approach taken by Hurricane has significantly de-risked the fractured basement prospects being explored by Hurricane.

To date, Hurricane has been admirably successful, finding commercial volumes of oil in basement in each of its drilling efforts. The company is now drilling to the west of Shetland to ascertain if the resource there offers a commercial flow. Trice describes the huge resources potentially available from basement reservoirs: “there is the potential for billions of barrels in the basement around the UK.”

**FINANCIAL RISK**

The innovation that is allowing access to such new and more difficult to reach resources is one further reason for the record investment currently flowing into the North Sea. Ibukun Adelbayo, co-head of emerging markets & equity primary markets for the London Stock Exchange Group, describes the international interest in North Sea companies flowing through London’s stock exchange: “London Stock Exchange very
much tends to be a home for global businesses. For that reason more than half of the top 15 integrated oil and gas producers are listed in London. “The financial muscle of London backs up the engineering capabilities of Aberdeen. It is of note however, that as the North Sea matures, the constituent companies working in the North Sea and in need of finance are changing.

The larger operators perceive the North Sea to be less material to their interests; Shell has recently moved to sell the Anasuria FPSO, and the Nelson and Sean platforms, though the company has reiterated its commitment to the North Sea. Andy Brogan, global oil and gas transaction leader for EY states: “The companies coming into the UKCS have been local independents - there are NOCs looking to acquire skills and capabilities here and trading houses acquiring assets.” Brogan concludes by summing up the interconnected nature of the UKCS’ industries across Britain, stating, “London is really the center of all oil and gas financing outside the USA. The hub here gives the business great access to key decision makers.”

Production and the securing of income from cost-effective assets beget investment. “The acquisition of BP assets and their integration was extremely successful, which gave us a core area in the central North Sea, an operating platform in Harding, a growth project, and a very significant gas cap,” says Pete Jones of TAQA. “We hit record production of 85,000 barrels a day for a number of days at the end of last year, which was a major milestone and certainly solidified us in the top 10 operators in the North Sea.”

Jones describes TAQA as “one of the best companies in the North Sea in terms of ongoing production, development opportunities and for its willingness to continue to invest. The company invests not only in acquisitions but also continues to invest on the order of USD 700 million as a kind of base level, which is very significant.”

There are many smaller companies seeking to gain the security of income from a producing asset. One of these is Xcite Energy. The company’s CEO, Rupert Cole, speaks of the strategy behind securing this asset: “Xcite is still continuing to pursue a de-risked action at Bentley- the whole industry places a far greater emphasis on this now.”

Part of this de-risking strategy saw Xcite undertake a highly successful extended well test on its Bentley field. “For investors, the key is that Xcite has a development ready, major strategic North Sea asset and is ahead of any other project of this type because of the company’s understanding of the asset,” Cole adds. “Xcite has financing options with regard to the field and the assets we will bring onto the field. The business is ready to move forward and this is why this company should excite investors.”

Finance is a major challenge for smaller companies and one that requires an innovative approach to overcome. “At the moment there is probably less available equity and debt capital for small and medium sized businesses,” says Ewan Neilson of Stronachs. “These businesses are thus trying to find new ways of accessing capital.” Innovation can help deliver production; by demonstrating that a company has the means to access the resource, investors become more willing to back a company up.

There are other ways to de-risk access to capital too, however: both through spreading financial risk through diversified debts, or by sharing the risk with another party. Nigel Hares, co-founder and advisor to the CEO of EnQuest, an exploration and production company, describes his business’ efforts to spread risk from borrowing: “Companies with strong existing cash flows are finding it easier to demonstrate their viability and access finance in this respect,” he explains. “Often, smaller companies do not have diversified financing and EnQuest’s bank debt was originally on a limited term. Since establishment, EnQuest has taken two actions to address this, firstly through launching the retail bond to increase the tenor of our debt and more recently adding some high yield debt. That gives the company debt with an eight-year term. Now EnQuest has diversified, strong financing with debt at the end of last year amounting to GBP 380 million [USD 644.69 million]. This includes bank debt, retail bonds with a higher tenor and high yield debt.”

Jacob S. Ulrich, chairman and interim CEO of Sterling Resources, an exploration and production company, expands on his company’s efforts to secure income from an asset: “For companies our size to attract investors, you need to have a portfolio of cash-producing assets. At Sterling Resources, we are very much reliant on one asset, Breaugh, thus it is critical...
The basic requirements for an ERRV in the North Sea are actually quite high. The UKCS has the highest requirements and standards of all the North Sea sectors. A standard vessel must be able to rescue and accommodate up to 300 people.

“Sentinel’s vessels will be built to accommodate more than 300 persons and house advanced medical facilities, a dormitory for twenty beds, seated areas, toilets and showers. The ships also carry fast rescue craft and daughter craft. Sentinel has worked closely with Palfinger to create our own designs of this type. These vessels will be unveiled June 10th in Southampton.”

“Our vessels have further capacities as well; they can perform emergency towing and have dynamic positioning systems. This latter innovation is highly original.”

“Fuel consumption and emissions are lower on our vessels putting Sentinel at an advantage over its competitors. The new design of our vessels is responsible for our vessels having a greater degree of reliability too. Reliability is of particular importance because if an ERRV breaks down, its associated platform may have to cease.

Cygnus aft port sea - credit to Sentinel Marine

The expertise within our energy team is recognised and valued by our clients, both nationally and internationally. Our legal advice is tried, tested and trusted.

Talk to the Specialists..
Sir Ian Wood, architect of the Wood Review

*Energyboardroom:* To what extent do you think the budget has reflected the recommendations in your report?

*Sir Ian Wood:* I think the budget has followed the report’s recommendations extremely well. The whole budget has a different tone to any I have read previously with regard to oil and gas because it very much talks about consultation, the importance of collaboration, an important study on the fiscal regime and also discusses a new regulator for the industry as well as taking into consideration the costs of exploration and decommissioning.

I think it is very encouraging. The HPHT (high pressure, high temperature) allowance in particular is an example of this. With regard to the review, the budget says all we might wish it to say. Particularly for the proposed regulator, the budget has given finance for the initial period and has stated there will be a CEO to oversee its actions.

It is very positive.

Since 2011, the treasury has sought to support development of older fields by, amongst other initiatives, introducing an allowance for brownfield sites. How does this compare to other efforts to secure continuing production in the North Sea; for example, with those in Norway.

The impact of the allowances is self-evident. There is a significant amount of construction work underway, and the allowances are significantly responsible for this. There are six or seven projects underway in the North Sea right now.

The fact that today, HPHT developments are receiving support from the treasury is encouraging. This acknowledges the many challenges that such developments face. British Gas are likely to go ahead with Jackdaw to cite one example of the HPHT facilitating new projects and in my opinion, HPHT marks a bold new era for the North Sea.

*EBR:* How do you feel about the bare-boat chartering tax introduced with the 2014 budget - is it an example of the UK government giving with one hand, and taking away with the other?

*Sir Ian Wood:* I think the most negative impact of bareboat chartering costs going up is the negative impact on exploration. It is essential to do something to revitalise
this aspect of the industry. Exploration is a seed-cone for the future.

Having said that, overall the budget is very positive and the treasury has committed to reviewing bareboat chartering tariffs after one year.

**EBR:** To what extent can new technologies deliver further access to resources under the UKCS?

**Sir Ian Wood:** The review states that the UKCS could use more new technology and at the moment is quite conservative. The way ahead will require advancing in a number of key areas—abilities which can improve exploration or reduce the cost of decommissioning being of significant value for example. The larger operators should work with groups spearheading development of these technical abilities. Technology will have a massive impact in the next few areas.
Oil & Gas UK: mission accomplished?

Energyboardroom: When we met in 2008, you stated that a fundamental goal of Oil & Gas UK was to draw attention to the importance of the British oil and gas industry. Do you think that the recently released budget proposals represent ‘mission accomplished’ in this respect?

Malcolm Webb: I do not think we can state ‘mission accomplished’ as yet - the situation certainly represents a task still in progress. We do have some cause for celebration, yet have also faced some small setbacks. Since 2008, to reflect on what has happened, Oil & Gas UK has grown considerably, from around 100 members then to over 450 now. The organisation has every type of operator in the UK as a member, and a broad representation of the supply chain, both big and small are affiliated to Oil & Gas UK.

As an all-encompassing industrial trade body, we have made significant progress. Alongside this, the organisation has gained a heightened profile within the industry and across the country as well. The extent and breadth of our political engagement has increased substantially, which has resulted in some positive developments. In 2013, the UK Government, encouraged by Oil & Gas UK, for the first time ever published an industrial strategy for the oil and gas industry, featuring goals for both producers and supply chain businesses. That has grown usefully, an entire industry strategy has been formed and there is even an important meeting to this end planned, which will be chaired by Vince Cable MP, the secretary of state for business, in London.

There is a paradox in the UK Continental Shelf (UKCS) at the moment, as challenges remain. On the one hand, there is record investment, and on the other, all-time-low levels of exploration.

The move to commission the Wood Review was an excellent signal of the Government taking this industry seriously, and we were exceedingly pleased to hear the Chancellor of the Exchequer announce in the recent budget proposals a full fiscal review of how the industry is taxed. I should mention, however, it was a shame that the UK Government decided to press ahead with its plans for bareboat charter, increasing costs for this part of the industry.

A third sign of the importance that the budget attaches to the oil and gas industry is the announcement of a new Ultra High Pressure High Temperature (u-HPHT) field allowance.

Over the last few years, Oil & Gas UK has been heavily involved with negotiating field allowances of one kind or another. This has been useful in increasing capital investment in the basin, with record capital investment last year and significant capital investment this year - expected to be around 13 billion GBP.

Since 2008, Oil & Gas UK has also achieved two things said to be impossible. Firstly, having negotiated with the treasury and delivered certainty over decommissioning relief. This was a tremendous step forward, and brings security for that part of the fiscal regime and allows the industry to move security arrangements for decommissioning from a pre-tax to post-tax basis. This means that considerable amounts of capital should be freed up to back these decommissioning liabilities.
Lastly, we also managed to persuade the EU commission from implementing a Europe wide safety regulation. Instead, a directive was implemented that allowed local regulation to address the needs of the regulation. This was hugely important, as this would have required the removal and replacement of our existing safety regime with a European one. The industry feels quite positive about its current safety regime and is pleased to have seen it retained.

**EBR: The Wood Review, as you mention, highlights the fact that exploration is at an all-time low ebb. Do you think a resurgence in exploration is possible, and if so, how - or is the golden age of exploration over entirely?**

**Malcolm Webb:** In all fairness, we are not going to get back to the glory days of the peaks in the North Sea. However, the bar must be raised substantially from where we stand at the moment. 15 exploration wells were drilled in the entire North Sea last year - a depressingly small number, which needs to be increased by a factor of three or four. Also, not only are too few wells being drilled, too little is being found by the wells that are drilled. The industry needs to be bolder and seek bigger plays and accumulations, and move away from simply searching for oil close to existing proven resources. Stratigraphic traps are one example of where searching could be fruitful. New and existing technology, applied correctly, can add greatly to our exploration capabilities. I am not convinced, for example, that subsurface techniques are being used to deliver all that they could.

Technology can also boost advanced oil recovery. A great deal of existing technology can help greatly, but if you look at the UKCS, many fields are still being decommissioned with more oil left in situ than that which has been extracted from that site - recovery factors can be lower than 50 per cent, and the industry should aspire to increase this figure through the application of further technology.

In 2013, the UK Government, encouraged by Oil & Gas UK, for the first time ever published an industrial strategy for the oil and gas industry, featuring goals for both producers and supply chain businesses.
Spreading Aberdeen’s expertise across Scotland

Energyboardroom: Aberdeen is renowned for being an oil and gas capital and the city has benefitted significantly from the industry. Nevertheless, one of your stated objectives has been to spread out the industry and allow the Highlands and Islands to benefit from the sector as well. What steps are you taking to make this a reality?

Fergus Ewing: Aberdeen is indeed Europe’s oil and gas capital and acts as a centre of excellence for a number of sub-sectors including subsea. Many of the companies in Aberdeen are trailblazers and can genuinely claim to be among the best in the world. It’s important to make it clear that spreading the supply chain throughout Scotland must not and will not be allowed to diminish Aberdeen’s role as capital.

At the moment, the industry faces three primary concerns: the shortage of experienced skilled personnel, the price inflation of projects, and issues of production efficiency. By encouraging activities such as the training of personnel and the growth of supply industries across the Highlands and Islands, we can go some way towards easing these pressures on Aberdeen. Therefore, at the instigation of business, we agreed to set up a task force for the north of Scotland.

We have simultaneously launched a series of events to promote increased oil and gas activity across the rest of Scotland. Many oil and gas companies already operate in Scotland’s central belt which comprises the urban populations of Edinburgh and Glasgow. Nevertheless we want to see more companies making the transition into oil and gas from other sectors such as engineering and construction. We also want to see more people – both graduates and experience professionals – choosing oil and gas as a career path.

It is also very important to convey the message that oil and gas has a bright future and is not at all a sunset industry. Back in the 1920s, John Davison Rockefeller remarked that oil had been running out ever since he was a child. Here we all are almost a century later and the industry is still going strong. As a government, we can assist businesses in oil and gas by bringing stakeholders together and facilitating exchange of information and expertise.

EBR: You quoted Rockefeller about oil running out. You also recently suggested that, if the right policies are implemented, Scotland’s offshore oil industry can still be productive up to the year 2100. What makes you so confident? And what is your reply to the skeptics?

Fergus Ewing: I suspect that there’s a future for oil and gas extraction in Scotland’s waters for most of the rest of the
century. I feel it would be unwise to put a particular prescriptive date on it, but if you think about some of the fields that were recently announced – such as Clair Ridge, Kraken and Mariner – it becomes clear that oil extraction off Scottish waters will extend beyond 2050. You would expect that many of these developments that are planned will have minimum lifespans of several decades. In his acclaimed book, The Prize, Daniel Yergin reveals that the history of oil has always been characterised by conservative estimates of what can be achieved for a number of very good reasons. Therefore it personally wouldn’t surprise me if production extends considerably beyond 2050.

Ultimately the extent to which technological innovation is embraced will prove decisive in determining the longevity of Scottish oil and gas. To what extent will enhanced oil recovery (EOR) techniques be adopted? To what extent will EOR techniques be capable of being combined with carbon capture and storage (CCS)? These are important questions because, as well as having the equivalent of £1.5 trillion worth of oil reserves left, we also possess the best resource in the world to store carbon dioxide in the form of the depleted oilfields. In the USA it has been demonstrated that the injection of carbon dioxide into basins can and does extract greater quantities of oil so there is an enormously exciting prospect that depleted oilfields could be used to become storage facilities for CO₂.

It seems to me to be short-sighted to assume that there will not be further technological advancements. Traditionally it has been impossible to develop heavy oil fields because of the technical difficulties in extracting heavy oil which is very viscous.

Our vision for Scotland is as a centre of innovation. We want to build on relationships between our universities and the industry and hope to establish a new Oil and Gas Innovation Centre (OGIC) to encourage the take-up of innovation. We believe the UKCS can become a test-bed for perfecting operations and technologies that can be realised all over world. Here in Scotland, Heriot-Watt University and the Institute of Petroleum Engineering have been pioneering exciting experiments for a mature field in North America using carbon dioxide in foam form injection to reduce the viscosity of heavy oil and bring it to surface. Meanwhile large companies are proceeding with plans to develop heavy oil fields – Statoil are working on the Mariner field, Xcite Energy on the Bentley field and EnQuest on the Kraken field. None of this could have been achieved twenty years ago.

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Interview with: Tom Dreyer, Vice President Exploration
EXP in the North Atlantic - Statoil (U.K.) Limited

Statoil’s UKCS strategy

Energyboardroom: In the 27th Licensing round, Statoil was awarded 8 exploration licenses. What have been the steps taken forward since receipt of these licenses?

Tom Dreyer: Prior to the 27th licensing round, Statoil only had one exploration licence. Since then, Statoil has sought to de-risk the assets received in the 27th licensing round. Some of them already had firm well commitments associated with them and Statoil is in conversation with partners preparing to drill them. That is in block 28/15, just south of the Catcher discovery - this well will be spudded in June at the asset Wall. The rigs are being moved to the UK currently.

Malcolm Webb has called for exploration companies to be bolder, and to look away from existing plays to make gains in exploration. What is Statoil’s exploration strategy; what considerations does the company take in deciding where to drill?

Statoil recognises that informed risk is key to success in exploration.

The company has three main legs to its exploration strategy. The first is that companies in the UK had mostly been moving like a flock of sheep; chasing the same areas. What happened in Norway was that success had been gained in looking in alternative areas; Statoil intends to follow this sort of play in the UK.

The second is the start of operations at the large field, Mariner and hopefully in the near future at Bressay. Statoil can look for opportunities in the surrounds close to them – in the longer term bolstering production close to the existing infrastructure. In a wider sphere, Statoil can also seek more of these large, heavy oil fields. This is part of our heavy oil strategy. This will require a high production rate per well for success.

Thirdly, is that Statoil has been very focused on the best possible seismic data, using our expertise and obtaining the best possible subsurface image. This is then utilised to inform our drilling programs.

EBR: To focus on the big news- Statoil’s move to development of Mariner represents the company emerging as a significant force in the UK. What does this project mean for the company and the UKCS?

Tom Dreyer: It is one of Statoil’s largest projects, both in terms of resources in the ground and in terms of capital investment. With such a large investment, the company has started to build up a larger presence in Aberdeen. We now have 100 staff in Aberdeen, but will be moving towards having around 600-700 staff in the city. This will be a significant presence in the exploration market in Aberdeen.

With such a big investment, Statoil will do everything it can to make the project as safe and as profitable as possible. The business is dealing with heavy oil, a substance almost inherently challenging. Heavy oil and lateral drilling techniques developed in Norway have contributed towards making this project profitable. This is not however, the project that will have the best profit margins for the company; one reason that good data is essential to obtain the greatest revenue achievable. The business will now comb through the area around Mariner and Bressay for
developments which can add to the revenue raised from this project.

With the 28th round of licensing fast approaching, Statoil is ambitious to expand again. We would like to triple the amount of licenses we hold- from 9 currently. Statoil is taking the heavy oil strategy seriously.

EBR: Statoil in 2012 declared in its technology strategy seismic imaging and interpretation to be one of four key areas for technological development. Since then, how has the company continued to develop these techniques, and are there any other areas of particular importance?

Tom Dreyer: Of number one importance is still seismic imaging and interpretation. It is the key to the subsurface. However, currently some smaller companies are offering innovative techniques and technologies. There are always experts coming up with good ideas and Statoil is eager to listen to considered offerings.

A second key area that the business is looking at is reservoir distribution in the subsurface- the geology side of things. Where Statoil has failed in the last three or four years, it has been often due to poor understanding of the reservoir itself. This is an area of increased emphasis for the company.

Thirdly, EM (Electromagnetic) techniques are a novel development, and we are now taking these quite seriously. We have a collaborative deal with EMGS to move forward on this front- our business is more positive about the prospects of this technology than we were two or three years ago.

Lastly, improving drilling efficiencies is important. This is principally engineering, improving the well design. Given that drilling is one of the most significant cost drivers we have, the simpler we can make the wells, the better.

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The excellence of independents

*Nigel Hares, Co-founder and advisor to the CEO - EnQuest*

*Energyboardroom:* You previously worked for BP, then for Talisman creating a remarkable record in increasing production rates for these businesses. *Why did you take the risk of founding a company such as EnQuest, focused on the North Sea?*

*Nigel Hares:* I first worked for BP for twenty years. This was in effect two decades of learning which I was then able to put into practice with Talisman over the following decade and a half. The business strategy at Talisman was not dissimilar to our ambitions here in EnQuest. This runs on the back of observations that as basins mature the supermajors and majors, entities present in the beginning developing big fields, taking big risks, begin to view the remaining opportunities as less material. As discoveries become smaller, the likes of Shell or BP will find these remaining assets less attractive- to such companies a few million barrels are not that important.

EnQuest has been set up as a small company designed specifically for the future North Sea business environment. To achieve that one must have all the capabilities of an operator and whilst remaining relatively small in size must be able to explore (though exploration is not EnQuest’s principal means of locating assets), buy and sell assets, operate platforms and develop smaller fields. EnQuest has all those capabilities and had 80 million barrels when the company floated in April 2010. This has been grown to 195 million barrels – a 25 percent per annum growth rate.

Having started with 80 million barrels, the opportunity to develop another ten remains very material- which is why EnQuest is leading in the North Sea as a notable independent producer.

What have been the principal stepping stones to the success you have had?

First, one needed the right assets, ones with remaining potential: assets that have not had the latest technology applied to them or assets which have been lying fallow because they are not, as discussed, sufficiently material for a larger player. Our first step was to find the right asset base and achieved this by demerging assets out of Lundin and Petrofac. Management of these passed to EnQuest’s staff, overseen by Amjad Bseisu, the company’s CEO. Along with Mr Bseisu, Jonathan Swinney and I were the founding directors and we grew an organisation capable of developing these mature assets and smaller fields.

The business is strongly financed, with limited debt so the business is capable of buying further assets.

*EBR:* EnQuest has stated it has an appetite for further acquisitions and has a 1.7 billion GBP credit facility in place to forward such actions. *What characteristics are you looking for in any potential acquisition?*

*Nigel Hares:* As a company our assets are already creating very solid rates of growth. By the time Kraken is operational in 2017 following a steady, considered development of the asset EnQuest will be producing over 50,000 barrels a day. The business for this reason is not in a rush to acquire further assets.

What is true however, is that the environment is moving from a seller’s market to a buyer’s market. Many North American companies are moving home to focus
on shale oil and shale gas and are selling their international assets to finance this. This means EnQuest is has access to more assets as they are sold off. Simultaneously our business faces less competition as these companies move out. 

Currently the majors and supermajors are seeking to improve their returns on capital employed. In reality that means these companies are looking harder at disposing of mature assets which again for EnQuest represent attractive opportunities.

The business has growth plugged in and is so not in a rush to undertake any hasty acquisitions. The business is very disciplined and since foundation has looked at over 100 potential assets, but has only acquired a handful. 

Any assets we acquire will need potential to have enhanced production through the application of further technology, through reducing costs on site, or through linking to other nearby fields. A good example would be EnQuest’s Kittiwake acquisition which closed this year. There was existing production on-site. This field was becoming of marginal interest for Centrica - the previous owner - due to its size. EnQuest seized on this productive potential, with opportunities to improve oil reclamation. In the area Scolty/ Crathes represented existing assets for EnQuest and our business was then already drilling an exploration well to the North at Avalon. The opportunity to connect these producing assets meant Kittiwake was a logical purchase. EnQuest sees some exploration potential in this area too. The Kittiwake field is a classic example of what EnQuest is looking to do in the North Sea.

The industry is ‘hot’ at the moment. At 14 billion pounds there is record investment in the UKCS as the moment. This masks however, the real issue as there are a small number of large projects west of Shetland ongoing. Beyond this, investment looks likely to drop substantially in the near future. Implementation of the recommendations of the Wood Review is essential to brighten the future of the UKCS and it is companies such as EnQuest which will deliver this overhaul of the industry. EnQuest can do this because the challenges of other companies are our opportunities.
Maersk Oil was founded in 1962 and today has total daily production of around 557,000 barrels of oil equivalent globally.

With global operations, in the UK the business has the ambitious target of doubling its UK production to 80,000 - 100,000 boed. It invested USD 1.5 billion in 2013 to help reach this target.

Maersk Oil is part of the A.P.Moller - Maersk Group.

**Case Study: return of the Gryphon**

Considerable damage was caused to Maersk's Gryphon FPSO subsea architecture by a storm in 2011. This necessitated disconnection of the FPSO to allow repairs whilst the damaged subsea infrastructure was removed and replaced with an optimised design.

Alongside critical repairs, the company used downtime caused by this incident to bring forward an upgrade of the installation and extend the productive life of Gryphon for another decade. The pause also saw the business acquire a new and extensive 4D seismic survey over the wider Gryphon area, again with the intention of increasing production in future.

The Gryphon field restarted production in May 2013 and is key to Maersk Oil’s ambition of doubling UK production by 2020. So far the business has experienced a safe and very smooth start-up, with performance from the Gryphon field exceeding initial expectations.

**Budget benefits for HPHT (high pressure high temperature)**

In March of this year, Maersk welcomed the United Kingdom’s budget which offered an HPHT allowance. This reduced the fiscal burden on such schemes, which still pose some commercial risk to companies taking them forward.

One such scheme of Maersk Oil’s that will benefit is that of Culzean. This was discovered in 2008 in the central North Sea.

Maersk retains almost a 50 percent interest in Culzean which is one of the largest UK discoveries in recent years and is due to come on stream in 2019. This one asset potentially could satisfy around 5 percent of the UK’s energy needs in 2020.

In May, Maersk Oil UK and partners chose a standalone facility to develop the asset. A cluster platforms consisting of a 12 slot wellhead platform (WHP), a central processing facility and living quarters and support platforms.

Total investment for the Culzean development is predicted top GBP 3 billion (USD 4.7 billion).
Operating fractured basement reservoirs

Energyboardroom: Dr Trice; you have over thirty years’ experience in the Oil and Gas industry including working for a super-major; Shell. What made you decide to change your career and found Hurricane?

Dr Robert Trice: Dr. Robert Trice (R.T):
It was a combination of two things; firstly from the understanding of fractured reservoirs gained at Enterprise Oil and Shell and secondly from a general recognition gained through published technical papers and my own experience within the industry that there was a clear opportunity not being approached by the oil and gas industry, namely fractured basement reservoirs in the UK. My experience had taught me that there was oil already discovered in UK basement and that no-one was chasing it.

EBR: Fractured Basement Reservoirs are harder to predict than conventional reserves. How is Hurricane developing techniques to locate and evaluate these resources?

Dr Robert Trice: Finding the fractured basement areas is the easy part of the process. Basically, one is looking for large structures that have the normal components of a trap: reservoir, seal and source. Hurricane identified areas around the UK where those were consistently present, and cross-referenced this with sites where existing drilling had taken place, either finding oil (or leaving it there) in the basement or sediment. As a result, this approach taken by Hurricane has significantly de-risked the fractured basement prospects being explored by Hurricane from an exploration perspective.

The principal challenge is evaluating the reservoir from a modelling point of view, calculating porosity, fracture density, fracture orientation and water saturation- these are the key aspects which must be investigated. Hurricane has its own bespoke technique for this in-house.

Hurricane is working with major specialist service companies as well as universities to push forward understanding of this resource. The skill-set that Hurricane offers is highly specialist and offers a route to significantly de-risk investment in this source of oil. To date, we have been extremely successful, finding commercial volumes of oil in basement that is two out of two discoveries. Only time will tell if it is three out of three. Our drilling targets are seismic scale faults and the fractures associated with them. This year, we plan to do something new, which is to drill a horizontal well not to find oil, but to ensure that it flows at a commercial rate. This is the biggest challenge that Hurricane is yet to face.

The skill-set that Hurricane offers is highly specialist and offers a route to significantly de-risk investment in this source of oil. To date, we have been extremely successful, finding commercial volumes of oil in basement that is two out of two discoveries.
**EBR:** What are the next steps to move from locating this oil, to market?

Dr Robert Trice: A new play, be it basement or sandstone will not become acceptable to the industry or market until many wells have been successful. The first step in de-risking this asset will be the aforementioned horizontal well. If Hurricane can obtain a commercial flow, then this gives us confidence that the sizeable volumes found there could be realised. The next challenge is to de-risk those volumes further-detailed whether the opportunity at stake is 60 million barrels, 200 million, or even 400 million. What the business will need to do is to drill another pilot well on the crest to determine how deep the oil goes, and whether there is an active aquifer present, which is indicated by some data already acquired. Presence of such an aquifer would mean that the resource numbers the company has published could be pessimistic because the recovery factors would most likely increase significantly in the presence of such a feature.

One must remember that at Lancaster well, the company has already suspended production at a well which was producing 2,500 barrels a day which is ready for tying into any new production facility. This is also intended for the planned horizontal well, and means that in a couple of years’ time the company could have four wells ready for production. All well planning has been considered as part of a phased approach, and the business is confident that this year’s well will work.

Following on from a successful 2014, Hurricane plans to drill a further horizontal well and a monitoring well prior to submitting a field development plan.

**EBR:** In terms of the wider North Sea, you have three billion barrels of oil only in your own acreage; what are the implications of Hurricane’s technology for the wider North Sea?

Dr Robert Trice: The maximum oil available that we have currently predicted is three billion barrels, but there are a couple of caveats to that, as it only considers the P10s, and secondly we do not as yet know the extent of the oil column. Looking at basement reservoirs globally, one can have hydrocarbon columns in excess of one kilometre. Hurricane has only drilled as deep as six hundred meters. There is massive potential for stratigraphic upside. Assuming that Hurricane is only half right, and there is only 1.5 billion barrels on the company’s acreage, this still means that there is the potential for billions of barrels in the basement around the UK. Last month, I spoke at the Petroleum Exploration Society of Great Britain (PESGB), and detailed basement opportunities around the UK. Pilot produced a map last year of what they called ‘proven basement plays’ which include the Rona Ridge and Central North Sea. Prospective basement also is highly likely in the Atlantic Margin, running from the West of Shetland all the way to Ireland, this geological structure is ideal for basement, featuring massive basement ridges with Kimmeridge clay overlapping, and the source is directly in contact with the reservoirs, and there are very thick cretaceous seals over the top. It is a massive opportunity, and a challenge suitable for the application of deep sea rigs.

There is massive potential, and in the North Sea there is basement with proven oil.
North Sea offshore service opportunities

Energyboardroom: You were appointed last year to lead DOF Subsea in the UK. One year on, what has been achieved?

Giovanni Corbetta: When I arrived 10 months ago in 2013, DOF Subsea had been growing its subsea business in the UK for almost eight years and had recently won a significant contract in the UKCS, providing a vessel and associated EPC services. Our workforce needed to grow and also we needed to secure more high profile projects, so one key aspect of my remit was to encourage development in this area. Over the last 8 months, our workforce has grown by more than 30 percent and we have secured two additional projects of a similar type.

DOF Subsea has always been able to offer more than the normal, with the ownership of a fleet of high specification vessels, combined with chartered in vessels when needed. This gives us a flexibility that is almost unique and enables us to provide full services to our customers.

I am particularly pleased by our success in recruiting engineers to our team. As I’m sure a lot of companies in the region would agree, good engineering talent is hard to recruit and retain, especially in Aberdeen. Our engineering manager, Graeme Buchan has done an excellent job working with our HR team to build our team up, and it now stands at 30 strong in the UK, with a further 30 based out in Bergen, Norway.

The business has looked to establish strategic partnerships to enhance our capability in certain key growth areas, most recently with an agreement with GSP Offshore, for use of the GSP Falcon, a vessel with proven experience in rigid pipelay. Moreover 70 percent of offshore services in the North Sea utilize some form of diving facility, so to meet the requirements of our client base, we have established good connections with experienced contractors in the region who work with us on projects where diving work is needed, so our customers always know that they will have the best services possible.

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**EBR:** DOF Subsea is a global company, with headquarters in Bergen, however, Aberdeen is a significant office in terms of the number of employees. What is the strategic importance of Aberdeen to DOF Subsea?

**Giovanni Corbetta:** From Aberdeen the company does not only cover the North Sea. It also covers the Mediterranean and West Africa – quite a large area indeed, and this is why so many employees are based here.

**EBR:** The contract backlog for your company currently amounts to around 35 billion NOK – what is your expectations on the North Sea market the next years?

**Giovanni Corbetta:** The record-high backlog demonstrates the solidity of the DOF Subsea Group. From the Aberdeen office we experience a good bidding activity level at the moment, and opportunities available are attractive - I have no doubt that DOF Subsea will perform well in our region over the next years.

**EBR:** Could you give us an example of a project illustrating DOF Subsea at its best?

**Giovanni Corbetta:** Whether on or offshore, DOF Subsea has a great reputation for applying common sense solutions to complex subsea problems. Our highly skilled team is known for their creative capabilities, experience and professionalism. They are experts in their field and this, together with our “can do” attitude, is our strength.

In December 2011, the Banff floating production, storage and offloading vessel (FPSO) and its subsea infrastructure suffered damage from severe storm conditions. The FPSO was subsequently removed from the field until such time as the damage to infrastructure could be assessed and remedial works undertaken. The repairs needed were extensive. DOF Subsea received the contract for removing and re-installing all damaged subsea assets as well as hooking up the FPSO. This included all the project management and engineering work, procurement, installation and commissioning activities. Earlier this month, the FPSO was towed out from Hamburg and returned to its station, and all 11 mooring lines have been reconnected. These final mooring works utilised our Skandi Skansen and the operations and team were highly commended by the client. The Banff project is still ongoing at the moment, and will continue with the installation of the risers into the FPSO and the umbilicals and the second phase of the diving operations.

This project is a great representation of DOF Subsea’s capabilities – it covers all the types of work often encountered on field developments, particularly in the North Sea. At the end of operations DOF Subsea will have utilised 13 different vessels, our teams will have worked over a million man-hours and we will have undertaken 100 days diving in water over 100m deep.
New service player carves out a niche

Energyboardroom: Cortez Subsea was created in 2010 and enjoyed a fruitful period of investment in 2013, culminating in a new office due to the doubling of its workforce. What opportunity in the market led you to create the company?

Alasdair Cowie: Many subsea contractor companies who entered the market in the mid-2000s to 2010 didn’t have the full spectrum of services required to be truly successful on their own. I saw a gap in the market where a new, service-oriented company could support contractors using technology focused on pipelines and inspections to reduce subsea costs.

We created Cortez Subsea four years ago and have been building the business ever since. In that time, we have built a solid reputation for advancing technology and maximising value.

EBR: In terms of your inspection, pipeline and ROV products, what are your principle generators of revenue? What are your growth drivers?

Alasdair Cowie: Pipelines will be the key growth area for us, especially with the continued development of our modular pipelay system (MPS) using Zap-lok technology and suite of subsea inspection software. We are also advocates of fostering cooperation. For example, through our partnerships with two companies that grant us access to their substantial fleet of ROVs we are able to provide the industry with a tailor-made solution to its inspection needs.

EBR: What are the advantages and capacities of the Zap-lok technology over welded pipe?

Alasdair Cowie: Quite simply, Zap-lok is quicker and cheaper. Our Modular Pipelay System (MPS) technology is more cost effective than the conventional method as it reduces the number of staff required offshore and allows pipe to be deployed from any readily available DP2 vessel.

Three of the major international operators have approved the use of Zap-lok for global subsea operations in the past two years. Operators need to make tiebacks and completions cheaper in the North Sea and using Zap-lok allows them to do so.

You are currently offering services to both start up and decommissioning projects. A leading industry figure told us that he felt high oil prices were creating a ‘bow wave’ pushing back decommissioning. To what extent do you agree with this assessment, and what is the current balance with regard to new, existing and closing projects in your portfolio?

The government in the UK has made clear that the objective is to extract as much oil as possible, but CNR, for example, has now stopped production on Murchison, one of the biggest ever offshore platforms in the world.
It is a myth that decommissioning is something new. I was on the Board of Decom North Sea for two years when it was inaugurated and I can assure you that decommissioning has been going on for the past fifteen to twenty years in the North Sea. People tend to think of decommissioning as simply taking apart platforms, but well heads, pipeline umbilicals and small platforms all need to be taken out. Forms of decommissioning like subsea well abandonment have been done for years and millions are spent annually on these operations. For companies in the North Sea, decommissioning is a reality, to a varying extent.

EBR: Cortez Subsea has secured its first contract win in Ghana for pipeline inspection work - what further prospects does Cortez consider are available for international expansion?

Alasdair Cowie: We are looking at West Africa, the Mediterranean, the Caribbean, especially Trinidad and Venezuela, the Middle East, and the Far East. A lot of operators are looking at Zap-lok for areas that are not necessarily deep water around the world.

In 2013, you stressed the need for collaboration as an engine for innovation in the North Sea. Can you tell us how your partnerships are helping you forward your business aims? How, for example, do you use collaborations as a gateway to foreign markets, and what do you look for in an ideal partner?

The partnerships we have are through people I have worked with in different guises for the last twenty years and these types of relationships are an integral part of bringing technologies to new markets.

For example, we are currently completing work and have work scheduled with OTSL in Trinidad, while we are also bidding for other work in the region in Venezuela and Colombia. Having a sound relationship with OTSL has definitely been beneficial. We also have a partnership for MCS data management on the software side in Egypt.

Where do you feel that new technologies could reduce costs?

The inspection software we use allows us to reduce the number of people needed on board for pipeline and structure inspections, to stream data in live time for onshore data processing for a fraction of the cost. The Zap-lok pipeline also saves companies money.

The challenge in the North Sea is that there exists at times an unwillingness to move away from conventional practices. Although the management may understand the benefits and operators seem to be coming around, the lower level management are still hesitant.
The importance of reservoir monitoring

Energyboardroom: How is TGS promoting its permanent reservoir monitoring technologies through R&D; how is the business spearheading efforts to improve this science?

Martin Bett: PRM systems deliver the highest quality seismic data which is necessary because one is looking for small production-induced changes in the reservoir. Placing seismic sensors permanently on the seabed provides the full azimuth, full wavefield data of the highest quality and best signal-to-noise ratio: the sensors don’t move, there is no flow noise and it provides four-component data including the acoustic pressure and shear wavefields.

Conventionally, a streamer is towed behind a ship for the purpose of obtaining seismic data. This is a noisy sensing environment, introduces repeat positioning errors and only acquires the pressure wavefield. Coupling sensors to the seabed and measuring the full wavefield allows us to differentiate between pressure and saturation effects as the reservoir is being produced.

Given that the lifespan of an oil field can be twenty, thirty or even 50 years or more, the technology used to instrument them must be reliable over such periods of time. Any PRM system is a significant investment and typically costs as much to install as it does to purchase. It should therefore be reliable as the cost of any intervention to repair or replace it will be high. TGS understands the need for consistent and reliable system performance over the life of the field and, for this reason, the Stingray technology is a passive fibre optic sensing system with no electronics in the sub-sea sensing system at all. Such optical systems and components have two characteristics that make them ideal for PRM applications: firstly they can transport very large quantities of data over long distances through a small number of fibres; secondly they are very reliable over a long periods of time.

EBR: To what extent are you able to reduce the ‘spread of scenarios’ that a client is faced with when further developing a field?

Martin Bett: Reservoir models are typically used to predict the behaviour of reservoirs. The one thing we know for certain about any reservoir model is that it is wrong! The model is developed based on information available at the time and usually when the reservoir is in a static condition. Once it is put into production the reservoir changes: wells are drilled, fluids are produced, fluids are injected; pressures and saturations change; geomechanical changes occur. It is hardly surprising that the modelled behaviour will, at some point, deviate from what we observe. The availability of fre-

This increased use of data driven analytical techniques has improved exploration success rates and is now being applied to production activities as operators seek to maximise recovery from producing fields.
quent, high-fidelity reservoir images enables us to refine and enhance the model based on measurement instead of making changes to model parameters to closer align predicted and observed behaviour. Decisions made by measuring will clearly be better than those made simply by modelling. TGS’ Stingray system is available today, a technology which allows frequent, accurate updates of the model. This significantly reduces the spread of reservoir model scenarios and allows for better and more effective reservoir management.

**EBR:** What does TGS envisage as the future of PRM and of its use by the oil and gas industry?

**Martin Bett:** If one looks at the origin of the oil and gas business, it started with ‘wildcatters’, a well was drilled largely on intuition. Positive hits resulted in further drilling efforts nearby. Over the years, remote sensing techniques have been developed which allow us to image the subsurface and dramatically improve our ability to predict where oil is likely to be found, improving the hit rate in exploration activities. This increased use of data driven analytical techniques has improved exploration success rates and is now being applied to production activities as operators seek to maximise recovery from producing fields.

Measuring, not just modelling is key to this forward step. All reservoirs are heterogeneous; all reservoirs are more heterogeneous than originally thought; and the degree of heterogeneity increases as the reservoir is produced. The ability to frequently measure how the reservoir is evolving as it is produced is becoming a vital tool to optimise reservoir performance and reduce production risk. Historically, in a production environment, measurements were concentrated in or around the wells, but PRM provides crucial information about what is happening in the reservoir between the wells.

As a result, our customers want the highest quality data, more frequently, over the entire area of the reservoir. In the future, it is likely that most offshore oilfields will have some sort of PRM system installed, especially where production and well costs are high and poor reservoir management decisions will have a significant impact on the economic, environmental and technical success or failure of the project.

All the easy oil has been found; the industry is now left with technically challenging fields that commonly involve significant investment.

TGS’ Stingray technology is mature: it was derived from military applications which first evolved in the 1980s and 90s. Its application in oil and gas is now maturing rapidly: new fields are being developed from the outset with PRM monitoring systems in place to assure delivery of the base production case; investment in Improved Oil Recovery (IOR) techniques is growing and implementing PRM solutions reduces risk and guides decisions on new wells and other IOR activities. In the North Sea, PRM techniques can radically improve production efficiencies and deliver a further impetus to an industry dealing with the challenges of responsible and economic management of the UKCS’ oil and gas resources.
HSE: a leading priority in the path to de-risking

Energyboardroom: You joined Falck Safety Services a little over a year ago. How did your previous positions prepare you for this role?

Colin Leyden: My previous experience comes from a supply chain perspective and through business development roles — of course across heavy industry there should always be a great value placed on safety. Working previously with organizations built around a core value set, these entities of course had such a focus on wellbeing and cooperation to achieve safety in the workplace. Falck’s value align with this ethos which I have been immersed in previously, making the move here easier. One of the key things I had heard prior to joining Falck was that the company is all about ‘people helping people.’ This is a short message and a very powerful one which clearly denotes what the organization is about globally.

EBR: How do you find dealing with health and safety issues across the various legislatures that you work in?

Colin Leyden: Health and safety had become a prominent consideration for all organizations globally, not discerning between whether said organization operates onshore, offshore, in the oil and gas sector or without. Everybody understands the aspect of safety and there is a growing corporate acknowledgement of Corporate Social Responsibility (CSR) and the need to imbed safety within the culture of the industry. Employees need to know that the employer is willing to hire them, develop them and look after them during their period of employment. That really opens the door to Falck as a safety services provider leading the industry to deliver excellence and further allows companies to adopt and take up safety as best possible. When governments as well as companies are focused on health and safety this transition is far easier.

EBR: You oversaw, almost from the start, the rebranding of then Falck Nutec to become Falck Safety Services — what were the motivations for the change, and how successful has it been?

Colin Leyden: Falck bought the global safety group in 2004 and took on Nutec in 2006 - from that point the organization moved forward as Falck Nutec. The business is a global safety services provider and one of the considerations provoking the change was that the previous name did not easily convey the company’s offering. It was decided to rebrand the organization to make it easier for clients to understand exactly what we do and to clarify exactly what this business does within Falck- the wider group has other platforms as well.

EBR: How are the aging assets in the North Sea changing the way Falck scopes its offering here in Aberdeen?

Colin Leyden: There are a couple of angles here. There are assets of a certain age which are still in production. This may reduce the speed said asset can be operated at, it may introduce inherent dangers into production because the equipment represents an earlier design,
produced in a less safety orientated period – and organizations such as operators have been very focused on these issues, ensuring that the age of an asset does not become a safety issue. Newer assets are entirely designed for safety.

The second part is centred on decommissioning. This process is only in its infancy, but the bill for removal of equipment will run into the billions of pounds and the work involved, will of course need to be done in a safe and appropriate fashion, due to it being such an inherently risky environment.

**EBR: Last year, Falck invested 100,000 GBP in a training facility here in Aberdeen. What additional facilities did this give you in terms of replicating an emergency scenario?**

**Colin Leyden:** Last year Falck invested a million GBP in the UK which was targeted at three areas. Flack has, with partners, a fire training area at the airport which is second to none giving a high level of emergency response and fire safety training. The facilities there were increased, giving a good training environment with real heat, black smoke and flames in a helicopter model. This is designed to be as realistic as possible, because through ‘real life training’ comes ‘real life experience’ and through such learning, one is better equipped to engage with a real emergency.

Falck also invested in crisis management suites, which offers the capability to train the offshore installation manager in the managing of emergency situations. There is a control room operations environment too. These simulators can be customized to replicate the client’s own facilities so that the training, by mimicking real life emergencies is as effective as possible.

Finally, the most significant area of investment was in a new man-riding crane unit, which allows a helicopter escape scenario to be recreated. During this operation, a faux-helicopter, weighing a significant amount and crewed by up to six delegates in training and two instructors is lowered into the water. The equipment to do this is sizeable, strong and has four points of redundancy to guarantee safe and efficient operation. This is state of the art equipment, and Falck’s UK operations are equipped with them and most of Falck’s bases globally too.

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The challenges of building an enterprise software company in Scotland

Petrotechnics was founded in 1989 with a vision to keep more people safe in hazardous industries. The business seeks to help clients improve their Production Efficiency and reduce Operational Risk through providing software solutions that enable safer, more focused working patterns. Its key offerings are entitled Sentinel Pro and Proscient.

Petrotechnics has also opened offices in Houston, Saudi Arabia and in Singapore as centres from which to leverage business advantage.

Case Study: Proscient; what does it do?
Proscient is Petrotechnic’s flagship offering. It is an enterprise ready Operational Performance & Predictive Risk software platform for hazardous industries. It helps organizations minimize operational risk and improve operational productivity. Proscient streamlines frontline operations by identifying risks to safe and efficient completion of work.

Proscient allows risk to be analyzed all the way through the organization from the employee engaged in repair work on the platform to the manager’s office; it appraises the organization holistically.

Proscient can provide your organization with significant business benefits:

- Improve the asset Integrity of plants through better maintenance effectiveness
- Reduce operational risk and increase operational efficiency
- Improve safety performance and keep staff safe
- Optimize production efficiency with fewer unplanned shutdowns and faster shutdowns and turnarounds

A new creature in the North East of Scotland:
Petrotechnics CEO Phil Murray travelled to Silicon Valley prior to launching his enterprise software, Proscient. Existing entrepreneurs in this technology hub were intrigued by the company’s vision. Petrotechnic’s management contacted individuals such as Ram Shriram, the founding investor in Google and Gordon Eubanks previously of Symantec. They were advised building an enterprise software company in Scotland would be difficult.

Aberdeen did not have nearly the level of industrial support that might be desired for an enterprise software company. The whole support network for software at that point was absent and so Petrotechnics has had to ensure that its network looks to wider Scotland and beyond. Yet Petrotechnics was determined to succeed in the North East of Scotland.

All the businesses software developers are all based here in Aberdeen; the creativity, technology and domain knowledge they have is held close to the businesses heart of operations. What the business had to do, however, was locate some senior staff out with Scotland. Access to the best expertise was deemed very important and is a core part of the business’ strategy.

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Assessing the UK’s subsea potential

*Energyboardroom:* Given that production on the UK Continental Shelf is declining, how do you assess the current potential for the subsea industry in the UK today?

*Neil Gordon:* Although there is a decline in production on the UK Continental Shelf (UKCS), based on our current technologies, we can expect a further 40-50 years of production. If we go back 30 years, the oil and gas was supposed to be gone in 20-25 years, but here we are today talking about another 40 years. In the future, so many different technologies will to come into play, such as improved seismic and overall understanding of the reservoirs. Currently, we are only at a total average recovery rate of between 30 and 35 percent on the UKCS: we have only squeezed the sponge so far, and we need to look at how to squeeze it further. There are significant opportunities for UK companies in this situation: if we can create the next level of subsea technologies to extend that recovery rate, we can export them around the world.

In order for this to become a reality, several important changes need to happen. The government needs to create the right fiscal incentives for operators to remain at brownfields, rather than abandoning them and moving on to other opportunities. Not only will this produce more oil and bring more into the national purse, it will also spur the development of needed technologies. It’s a very positive circle to create.

Over the last few years, this environment has not been in place in the UK until now as the government has realised the need to create long-term sustainability in the oil and gas industry. Compared to other oil and gas hubs around the world, the UK has the opportunity to be one of the most stable producing countries in the world from a political, economic and security standpoint. And creating the right atmosphere for operators in turn affects the supply chain: wherever big operators invest, the supply chain will follow.

*EBR:* How important is the subsea sector for the UK economy today?

*Neil Gordon:* The last survey we conducted on the global subsea oil and gas market was conducted in 2010, and found that the global market was estimated at GBP 18.9 billion. From this, the UK was bringing in GBP 5.9 billion, which equated to about a third of the global market. We carried out the same exercise and used the same methodology this year and found that today, the market is estimated to be worth around GBP 20 billion, with the UK responsible for GBP 8.9 billion of that, which is significant. A lot of this is domestic work being carried out in the North Sea, but also internationally, and the com-
panies contributing come predominantly from the northeast of Scotland, simply because of the presence of the industry here, but there are companies contributing from all over the country. Products or services exported from the UK three years ago was worth GBP 3.3 billion in 2010, and that’s grown to GBP 4.3 billion. 66,000 people are currently working in the sector, and we are looking at 10,000 plus coming into the sector to continue the growth that we are seeing.

What work are you carrying out in order to help UK subsea-focused companies expand their businesses and look for opportunities abroad?

Neil Gordon: Part of our work at Subsea UK is to help other countries develop their subsea industries and many ask for our help as they know that this part of the world has the best subsea supply chain. I am speaking with various bodies and organisations in Brazil, offering them advice on how to develop their subsea supply chain capability. Other parts of the world are looking to us to find ways to emulate our supply chain. They also look towards Norway as a model of a technology driven and supportive national oil company, but the supply chain we have in the UK is the strongest for subsea. Malaysia is another area where we are working closely with local organisations and have developed MoUs (Memorandums of Understanding).

The supply chain is not just regional; it is truly international as a big field may be serviced from all over the world. The supply chain in the long-term is for the operating expenditures of a project that come after the capital expenditures involved in construction; maintenance needs to be much more local, and that is where there is an opportunity for companies in the long-term. What is happening in Australia at the moment is five or six big subsea projects running simultaneously, with extremely high capital expenditure, and there will be a lot of activity from certain companies in the construction stage. The long-term, local businesses will be able to find space to work once the projects reach a more operational stage.

Subsea UK expects the subsea sector to double in size over the next five years, and for UK-based companies this means great opportunities for growth in other parts of the world where deepwater projects are underway, namely Brazil, the Gulf of Mexico, Africa, Australia and Asia.
Growing demand for asset integrity services

Energyboardroom: Oceaneering has undergone a lot of change over the years. There have been important acquisitions such as that of AGR field operations in 2011. What are the core values of Oceaneering? And how has the company ethos evolved over time?

John Watkinson: Oceaneering originally started out as a diving company. We then became acclaimed for our work developing, integrating, and applying both new and established technologies to the challenges of operations in outer space. We are now in the process of taking what the company learned in space into subsea domain again. Both space and subsea are harsh environments that have many common hazards.

Oceaneering has nevertheless been remarkably successful in staying true to its original values. We may be a multinational organisation with a market capital of over $9 billion, but we still have a corporate culture in which everyone remains accessible irrespective of seniority. Anyone can pick up the phone and speak to our President and CEO on a one-to-one basis.

Neil Riddle: Another hallmark of the company ethos is the so-called ‘One Oceaneering’ concept. There is a high level of cross-pollination between the different divisions within the company which ensures that actions are delivered in a joined-up manner. If, for example, one of our customers has an issue with a subsea pipeline which they require inspecting, we would call upon our colleagues in the Deepwater Technical Solutions (DTS) division to marinate the tool required. We would also call upon our colleagues in the Remotely Operated Vehicles (ROV) division to provide us with access to the seabed. Every solution becomes a joint effort.

EBR: Results in 2012 were exceptional with 27% growth in revenues. Oceaneering’s President and CEO Kevin McEvoy stated that 2013 would be another record year. What has been the Asset Integrity Division’s contribution to this success?

John Watkinson: Demand for asset integrity has been increasing and our division has been taking on more and more work. It partly stems back to the large loss of containment at the Macondo Prospect in 2010. Customers became acutely aware of the potential severity of incidents and demanded more thorough and more frequent inspections. Over the past three to four years there has been a lot of attention to the integrity of plants.

Neil Riddle: The UKCS has traditionally been very strong on compliance and has served as the industry benchmark on asset integrity for over 20 years. Piper Alpha was, of course, a wake-up call for oil and gas companies in the North Sea and ever since there has been a focus on keeping offshore installations well maintained. The UKCS is also one of the harshest environments in the world and one of the strictest in terms of safety and environmental regulation. These combined factors have also helped to drive up business. Customers operating in the Caspian Sea and in South East Asia look increasingly to firms like us with experience in the North Sea for guidance on asset integrity.
EBR: Many companies are already preparing for the decommissioning segment. Brian Nixon of Decom North Sea predicts that 27 operators in the UK sector will spend a combined £10 billion on decommissioning within the next ten years. Oceaneering currently provides decommissioning services in the Gulf of Mexico. What are your preparations for this type of activity in North Sea?

John Watkinson: We are currently developing new technologies using ultrasound, x-rays and gamma-rays. Our centre of excellence, which is based in the UK, has been busy exploring ways to carry out non-intrusive inspections enabling pipes, vessels and platforms to be investigated without having to break containment. This allows us to examine the large amounts of pipework present on an offshore installation, for example, without the customer having to interrupt their operations. These forms of technology will also be relevant and easily transferrable to any decommissioning projects that we undertake.

One innovation that we have increasingly adopted for decommissioning projects has been to make use of alternative modes of transport. Rope access as a means of ingress and egress, for example, eliminates the need for costly and time-consuming scaffolding. Nowadays the vast majority of people that we employ out in the field are multi-qualified and possess rope access capability.

Neil Riddle: The techniques that we have been discussing here are also replicated for our projects in the Middle East and Asia. Technologies and models that we develop in the UK are then often transferrable to anywhere in the world where we happen to be awarded projects.

With the introduction of brand new technology there are, of course, many challenges. Often we have to conduct blind trials to verify that innovations work as they are meant to and deliver the desired outcomes. Once a technology is proven it will then be codified into a set process and the next stage will be to train up the operators to apply that codified technology. This can be challenging in itself because it is sometimes very difficult to find skilled workers with the right competencies and motivations. The final stage is to ensure that newly acquired know-how on applying a new technology is maintained and endures within the company. The package is complete when we have the technology, the process and the person.
An established engineering presence in Aberdeen

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