

SPE review

magazine of the Aberdeen and London sections
of the Society of Petroleum Engineers

issue 268 | March 2013



Society of Petroleum Engineers
Aberdeen and London Sections

ISSUE CONTENTS:

Contacts	02
London Section Sponsors	02
60 Seconds with a Young Professional	02
Upcoming technical meetings	03
University of Leeds update	03
SPE London Technical Seminar report	04
YP News	05
Technical meetings round-up	06
Continuing Education events	8 & 10
Forthcoming UK events	10
Consultants listing	10
Recruitment	5, 9 & 12



A WINDOW ON WELL INTEGRITY

SPE Aberdeen members braved blizzard conditions to learn about the pivotal role of accurate diagnosis in the management of well integrity issues - *see page 6*

Book now!

SPE London: Regional Focus Seminar, 2nd Annual Conference & Exhibition and 7th Annual Women in Energy Seminar – *page 8*

SPE Aberdeen: 4th European Well Abandonment Seminar – *page 10*

LEEDS SPE STUDENT CHAPTER DAZZLES MEMBERS!

Following our highly-successful membership recruitment programme at the start of the session, the University of Leeds SPE Student Chapter committee has dazzled members with a flurry of activities, *reports Chapter Publicity and Marketing Officer Abu Hafiz.*

On 10 October, around 40 members and non-members gathered at Pole Position **Indoor Karting**, to race against each other in three-man teams. The entertaining event provided an opportunity to get to know each other, strengthened the Chapter's cohesiveness and, above all, gave members a unique 90-minute karting experience!

Mohammed Mahmud, a third-year Chemical Engineering student, said: *"It was a fantastic and fun experience which I didn't want to see end."*

The following week, our **Academic Guest Lecture, 'Observing pressure, hydrodynamic mechanisms and overpressures in the earth'**, was delivered by Dr Frans Kets, a former Shell Oil Company Geophysicist with more than 32 years of experience in research, development and training in the oil industry. He is also currently a research fellow for CiPEG – University of Leeds. Using layman's terms, Dr Kets scaled-down the complexities of the subject to include everyone and his insightful lecture was appreciated by all who attended. The hour-long event took place at the University's School of Process, Environmental and Material Engineering (SPEME).

(cont'd on page 3)



SPE review

The Society of Petroleum Engineers (SPE), a not-for-profit professional association of 104,000+ members from more than 123 countries worldwide, is a key resource for technical knowledge related to the oil and gas exploration, drilling and production industry.

The SPE provides services through its global events, publications and website at www.spe.org.

SPE review is published 10 times per year by the Aberdeen and London sections of the Society of Petroleum Engineers. It is sent to over 5,000 UK SPE members, and quarterly to an additional 7,000+ European members.

If you have read this issue and would like to join the SPE and receive your own copy of **SPE review**, as well as many other benefits – or you know a friend or colleague who would like to join – please visit www.spe.org for an application form.

The views expressed herein are not necessarily those of the SPE.

Extracts may be reproduced subject to a clear acknowledgement of the source.

CONTACTS

Communications Management Committee: Mohammad Khan, Abhimanyoo Kohok, Gbenga Oluyemi, Wonuola Scott

For queries about editorial contributions to **SPE review** or to book advertising space, please contact:

Editorial: Judy Mackie, M&M Media, +44 (0)1224 318088, spe.editor@mmm-media.co.uk

Advertising: Allan Montgomery, M&M Media, +44 (0)1224 318088, spe.advertising@mmm-media.co.uk

The copy deadline for the April 2013 issue is **18 March 2013**, with publication scheduled for **3 April 2013**.

CHANGE OF ADDRESS?

If you need to change any of your membership details, please visit the **Update your profile** link at the foot of the homepage at www.spe.org.

SPE LONDON LAUNCHES NEW WEBSITE

SPE London has launched a new website, developed using the SPE International template. The address is:

<http://connect.spe.org/london> or <http://london.spe.org>.

There will also be a link to the site from the current SPE UK and SPE London Conference websites (www.spe-uk.org; www.spelondonconference.com).

SPE LONDON SECTION SPONSORS

Afren plc

Anadarko International

Energy Company

BP Plc

DONG E&P (UK) Ltd

E.ON Ruhrgas

Geoscience Limited

Nexen Petroleum UK Ltd

Oilfield Production

Consultants (OPC) Limited

OMV (UK) Ltd

Petrofac

Petroleum

Development

Consultants Ltd

PetroVision Energy

Services

Premier Oil Plc

RPS Energy

RWE Dea UK Ltd

Tullow Oil

SPE PEOPLE



60 Seconds with a Young Professional...

Razzak Al-Gurnawi

MITAS Engineer, Maersk Oil,
Aberdeen



Where were you educated? Your qualifications?

I completed my Civil Engineering undergraduate studies at City University, London, in 2007. Several years later I moved to Aberdeen for my postgraduate study, where I completed an MSc in Subsea Engineering at the University of Aberdeen.

Why did you join the industry?

The industry is very buoyant, with a wide variety of work available. The challenges are unique and there are many interesting learning opportunities for individuals who are not afraid to get their hands dirty.

What do you like most about your job and what would you change?

The international nature of the business and the opportunity to work with many different individuals with very different backgrounds worldwide, is something that has always interested me. As for something I would change? I guess I would like to spend a little more time in one location to get to know people better, but I am sure this will come in time.

What has been the best moment of your career so far?

One achievement I am particularly fond of was the Energy Apprentice event, organised last year by the SPE Aberdeen YP committee, which I was part of. It was a lot of hard work, but seeing it come together was very exciting.

What kind of future do you think the industry faces?

A bright one. There are many new developments and technologies on the horizon and that is bound to create opportunities for everybody.

How do you like to spend your leisure time?

I have recently taken up rock climbing and enjoy it very much. Scotland is the perfect place to get into this (when it isn't raining, that is!).

What makes you angry?

Mistakes that can be avoided are always a source of frustration for me. If it can be done correctly, there is no reason why it shouldn't be.

What makes you happy?

It is always great to meet new people in and out of work. You always learn something new!

Who inspires you? Why?

I like to look to my immediate surroundings for inspiration. I think everybody has achieved or experienced something that can inspire us in some way. The trick is being able to uncover these attributes and appreciate them for what they are.

What value does the SPE offer you and how/why do you contribute?

The SPE offers great opportunities to learn from your peers and to extend that all-important professional network. I try to attend as many events as I can and if there is an opportunity to be involved in organising an event, I try to take it up wherever possible.

What is your dream job?

Something that will keep me on the move, meeting new people and scratching my head!

TECHNICAL MEETINGS

LONDON

ABERDEEN

EDINBURGH

London

'What reservoir fluid information is needed for Field Development? How should we plan to collect it? How can we check the data quality and correct it where necessary?'

These questions will be addressed by **Brian Moffat**, of **Petrophase**, at the SPE London evening meeting, at the **Geological Society, Piccadilly, on 26 March**. His pre-dinner presentation, **'Reservoir Fluid (PVT) Analysis - Value to Appraisal/Field Development Planning'**, will also provide interesting examples of how to avoid misinterpreting data.



Brian has more than 25 years' experience in the chemical and oil and gas industries. After starting in PVT laboratory development and operating wellsite sampling and analysis, he managed reservoir fluid research and technical support in PVT, NMR, fluid flow in porous media, gas condensate recovery, oil migration and geochemistry. He later worked as a Petroleum Engineer before founding and becoming MD of petroleum fluids consultancy Petrophase, in 2004, with a vision to link disparate disciplines under Petroleum Fluid studies and provide a service to the industry solving problems with reservoir fluids. By combining joined-up thinking with expertise in PVT, thermodynamic modelling, sampling, geochemistry and petroleum engineering, Petrophase has achieved several world first solutions, delivered great financial benefit to its clients and won four industry awards.

Following the networking buffet, SPE Distinguished Lecturer **Fraser Lawson**, of **Tullow Ghana Ltd**, will demonstrate some of the significant technical challenges facing extended reach drilling (ERD) in deepwater Ghana, in his presentation **'Tullow Ghana - deepwater ERD experience'**.

ERD already carries a well-understood list of technical challenges that if not adequately addressed can easily result in failure to complete the well. In a fast-track deepwater development the complexities and risk exposure for any operating company are further increased. Three key challenges - hole cleaning, borehole stability and well bore surveying - are discussed in some detail in the presentation, which also highlights the importance of

engineering to reduce risk and maximise the probability of success, and demonstrates how, despite the ERD operational difficulties encountered by Tullow Ghana, the field was delivered on target with 'best in class' deepwater drilling performance.

Fraser Lawson has over 25 years of international well engineering experience, including various ERD and deepwater projects. He holds BSc (Hons) and MSc degrees in Civil and Petroleum Engineering, and is a Chartered Engineer. He is currently Well Engineering Supervisor for Tullow Ghana Ltd.

Before dinner: 5-6.30pm

Dinner: 6.30-7.30pm

After dinner: 7.30-9pm

Booking: www.katemcmillan.co.uk; tel: 07736 070066; katespe@aol.com

Cost: £34 for SPE/PESGB/EI members, £44 non-members, £19 unemployed members, £5 students booking by Friday 22 March (£19 after).

Aberdeen

SPE Distinguished Lecturer Fraser Lawson will repeat his presentation (see above) at the SPE Aberdeen evening meeting, on **27 March (6.30-8.30pm)**, at the **Douglas Hotel**.

Edinburgh

On **9 April (6.30-8.30pm)**, a **'Sand Special Night'** technical presentation and networking buffet for Edinburgh members will feature presenters from **Senenergy** and **Yala Peak**. Venue to be confirmed at: www.spe-uk.org (Aberdeen Events).

Bookings for Aberdeen and Edinburgh meetings: www.rodgerandco.com; tel: 01224 495051; spe@rodgerandco.com. Further information at: www.spe-uk.org.

LEEDS SPE STUDENT CHAPTER DAZZLES MEMBERS!

(continued from page 1)

"Dr Kets absolutely did justice to the topic and am glad I did not miss this event," said Mohammed Said, a second-year Petroleum Engineering student.

Our **Eid Social**, on 26 October, was a fantastic success with a full-house attendance at the Spice Quarters restaurant, Leeds. The dinner provided a social networking platform for members and non-members, and also the opportunity for SPE to join in the celebration of the Muslim festival, Eid Adha. As it happened to coincide with the première of the James Bond movie *Sky Fall*, the event ended with a trip to Vue cinema.

The **Ambassador Lecture Programme (ALP)**, on 16 November, was organised in association with SPE YP London to allow SPE young professionals to share their career development experiences with the students. Committee members of the University of Manchester SPE Student Chapter joined us for the event. YP London Chair Nick Curum, Petroleum Engineer at BG Group, and Kanad Kulkarni, a PhD student at London South Bank University, were the main speakers. Nick emphasised the need for students to identify which jobs they want to develop their careers on and the qualifications required for these jobs. He also added that further postgraduate studies may not necessarily be required by every job. Following the two-hour presentation and Q&A session, there was a further hour of networking and refreshments.

On 22 November, 28 of our third-year and MSc student members attended the **PETEX 2012 Graduate Career Fair programme**.

SPE London, in association with CiPEG, subsidised the total cost of attending with an overnight stay in London and free tickets to the successful event. Hafiz Karim, our Chapter's Social Secretary, commented: *"It was an excellent opportunity for our members to*

experience an event involving a range of businesses in the UK petroleum industry, both large and small. Equally importantly, the social side of the trip was successful and gave students time to take their minds off university work!" Abdurahman Adam, our Treasurer, added: *"This provided a great opportunity for us to network with the big personalities and players in the industry. And we surely did!"* Our sincere thanks to Dr Rachael Spraggs of CiPEG, University of Leeds, for providing us with the free tickets to the event.

Further activities have included attending BP and Chevron recruitment sessions, as well as our football team's (Roughnecks) ongoing participation in a weekly football league - they are currently second in the league table. We now look forward to organising further high-quality and educational activities for our members during 2013.



University of Leeds Student Chapter Committee:

President - Saddam Al-Sadi

Secretary - Muftah Emhemed

Treasurer - Abdurahman Adam

Social Secretary - Hafiz Karim

Sports Secretary - Ragheb Ebrahim

Publicity and Marketing Officer - Abu Hafiz

‘Take courage’ and ‘fear not’ are key messages for our North Sea industry

By Cristian Masini, SPE London Continuing Education Committee

We all have heard the buzzwords before: ‘disciplines integration’, ‘cost efficiency’ and ‘time-to-market’. The novelty of SPE London’s Continuing Education seminar, ‘Re-developing the North Sea’, was hearing all of them in a few talks, under one roof.

On 13 February, a variety of professionals with various backgrounds and experience, ranging from students to the more-seasoned, gathered at the Geological Society for a series of interesting presentations on the future prospects for the North Sea oil and gas industry.

The challenges are known: ageing infrastructure, shrinking ‘size of the prize’ and competition for talent. And while the basics stay the same – “get the engineering right, before going out there with a rig,” ADIL reminded us – the solutions to some of the problems may involve new approaches. These range from complex EOR schemes or tailored ERD wells, to simpler (but still very effective) solutions, such as installing jet pumps to resolve bottlenecking and back-out issues.

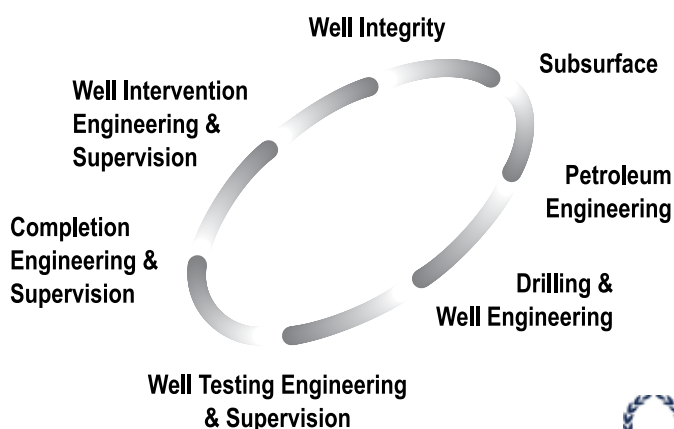
Overall, it was recognised that with maturity of assets technical challenges increase, and sometimes the subsurface still presents unknowns, even after years of production. That is when integrating the inputs from all disciplines becomes essential, and South Arne, with 4D seismic and geomechanical input into the dynamic simulation, was a perfect example of this. Another field case was offered by BP in their talk on Schiehallion, highlighting that there are still a few big reserves out there. What is required is the courage to commit to big investment decisions.

The keynote speeches from Boston Consulting Group and McKinsey offered an illuminating perspective – at least a novel viewpoint for the Engineer or Geoscientist – of the current business environment. As an industry there are still a few areas for improvement, supply chain being one of them – but the overall message was “fear not, as there is still business for years to come!”

The event was kindly sponsored by Caltec, whose representatives and other attendees are pictured with Continuing Education Committee Chair, Alejandro Primera (far right).



Integrated Consultancy Services
FROM CONCEPT TO COMPLETION



Following the recent award of UK and international contracts, we are now recruiting talented, enthusiastic & motivated individuals to join our growing team

www.axis-wt.com info@axis-wt.com +44 (0) 1224 829200



YP NEWS

Getting to grips with formation damage

First event in YP Aberdeen's 'Simplified Series 2013 - demystifying petroleum engineering'

Around 45 SPE Aberdeen members attended an informative technical session organised by the Section's Young Professionals and hosted by SPE RGU Student Chapter at its Schoolhill campus, on 30 January.

YP Committee member Nazli Lochrie introduced Michael Byrne, Senergy's Global Technical Head of Formation Damage, whose detailed presentation, 'Formation Damage – Measurements and Implications', included the key message that formation damage is not natural and is caused by man-made processes such as drilling, completion, attempted stimulation, production, well intervention and injection.

Formation damage, he said, is the reduction of the near wellbore permeability and may impact negatively on the well performance, field life and value. The issues of formation damage can be solved by reducing near wellbore flow rates, using less damaging fluids and even stabilising the fines. In conclusion, Michael explained that formation damage is measurable and quantifiable, and with future technological advancements we can model wells and near-well bores with CFD (Computational Fluid Dynamics).

Following a lively Q&A session, the attendees enjoyed light refreshments and the opportunity to network with fellow SPE members.

Roxar is an international technology company to the oil & gas industry. The company develops solutions for reservoir management and production optimisation for oil & gas companies challenged with maximising returns from their reservoir assets. Roxar is part of Emerson Process Management.

SOLUTIONS.



Reservoir Simulation Developer

The growing use of Roxar's Tempest MORE reservoir simulator means we are expanding the development team in Oxford UK. If you have a proven track record in simulator development and want to make a real difference by working in a small group on a code that is used across the world please contact us.

Areas of interest include advanced well modelling, compositional simulation, chemical flooding and solver programming.

Contact sidra.moazzam@emerson.com or call +44 1865 71 28 28 for more details.

www.roxarsoftware.com



The Emerson logo is a trademark and service mark of Emerson Electric Co. Emerson Process Management. ©2013 Roxar.



EMERSON. CONSIDER IT SOLVED.

RECRUITMENT



Department
of Energy &
Climate Change

Senior Reservoir Engineer

£31,021 – £37,851 plus £37,790 specialist allowance per annum

Based Aberdeen

Ref: IRC75410

The Licensing, Exploration and Development Unit (LED) within DECC works to promote exploration for oil and gas resources over the UKCS and ensures field developments maximise the economic recovery of hydrocarbons while paying due regard to the environment. We are looking for a talented and suitably qualified Senior Reservoir Engineer to join us in Aberdeen.

You will be responsible for assessing new and ongoing field developments, to ensure that they achieve the maximum recovery of economic hydrocarbons, and for promoting the development of Fallow Discoveries and exploitation of Near Field Potential for existing infrastructure.

You will utilise your reservoir engineering skills in addressing field development issues across the wide range of reservoir contexts covering both clastic and carbonate reservoirs containing fluids varying from heavy oil through to gas condensate under conditions varying from normal pressure and temperature to HPHT through all phases of field life from pre-development to cessation of production.

In addition to a first degree, or equivalent, in a relevant engineering or scientific discipline, you must have a strong technical background in field development and be able to demonstrate a high level of competence in the reservoir engineering skills necessary to address oil and gas field appraisal and development issues across a wide range of assets in the North Sea.

This role requires a team player with a proactive approach and the ability to handle a high level of responsibility. You will also need strong communication, interpersonal and influencing skills as well as technical expertise and credibility to win the respect of colleagues and industry representatives.

Applicants will be expected to undergo security clearance.

For further information about the post and application process please visit
<https://jobs.civilservice.gov.uk/company/nghr/jobs.cgi>

Closing date: 22nd March 2013

Interviews: expected to be week beginning 11th April 2013.

DECC values equality and diversity in employment and welcomes applications from all sectors of society.



Accurate diagnosis raises the game on well integrity management.

Blizzard conditions failed to prevent a large number of SPE Aberdeen members, including a hardy contingent of Heriot-Watt students from Edinburgh, from attending the Section's first meeting of the year, on 23 January.

In his comprehensive presentation, **'Information to action: the pivotal role of accurate diagnosis in the management of well integrity issues'**, Tobben Tymons, Marketing Manager (Wireline Eastern Hemisphere) with Archer, the global oilfield service provider, outlined to his audience the scale and nature of the well integrity challenge; described how integrity issues can be accurately diagnosed, and demonstrated through detailed case studies how high-quality diagnostic information led to successful outcomes in two very different industry scenarios.



Tobben began with the wakeup call that well integrity issues are exposing the global oil and gas industry to significant HSE hazards and costing the industry more than \$1 billion per day in lost potential production – a sobering statistic based on independently-verified research by OTM Consultants and production and hydrocarbon price information from BP's Statistical Review of World Energy.

"A typical well is built from over 2000 individual components and systems and is expected to perform for many years exposed to the harshest conditions on the planet. Not surprisingly, well systems can and do fail," he said. "This outcome may be an inevitability – the data I'm about to show you confirms that well failure is a common occurrence – but as we know, well failures can have dramatic, even catastrophic, consequences. It is therefore a non-trivial matter."

As the slide shows, well integrity issues present a significant global challenge, indiscriminately affecting onshore and offshore wells across all regions. *"OTM has estimated that approximately 38% of global wells are affected by well integrity issues,"* Tobben said. *"Of this total, nearly 20% are operating under dispensation and 19% are actually shut-in. This means our collective well stock is only 70-80% efficient."*



He explained that most well integrity failures result in two types of outcome: 'leak flow' (leaks through tubing, casing and other pressure barriers), or 'annular flow' (leaks through cemented annuli or other zonal isolation barriers). According to an Archer customer survey of June 2012, the most common failures affecting well integrity and performance involve: annular integrity and zonal isolation (35%); tubulars (28%); wellheads, trees, hangers and seals (17%); safety and other control systems (14%), and screens and ICDs (5%).

Tobben then described a typical well integrity management process, explaining that due to the complexity of the wells and the large amount of data available, obtaining clear, reliable, unambiguous information at the front end of this process is very often the biggest impediment to a true diagnosis and satisfactory outcome.

His subsequent case studies demonstrated how Archer's systematic approach using advanced ultrasound leak-detection and 3-D scanning

technology enabled accurate diagnosis of the root causes of two diverse well failures, thereby – according to client testimonial – playing a key role in a) quickly and cost-effectively re-establishing integrity of a production well in EnQuest's UKCS Don South West field and b) in providing assurance that water injection could continue with no risk to operations, as well as providing a baseline for future integrity monitoring, for one of the two water disposal wells at Shell's Pearl GTL Plant, in Qatar.

Well integrity is one aspect of Archer's overall drilling and well services portfolio. The global oilfield service provider employs over 8,100 personnel through 118 global locations, with key regional bases in the North Sea, Middle East, Asia, North and Latin America.

You can read more by downloading Tobben's presentation from the Aberdeen Events Past Presentations section, at: www.spe-uk.org

SPE Aberdeen's monthly meetings programme is kindly sponsored by Archer and Shell.

London

More than 180 SPE London members packed the auditorium at the Geological Society, on 29 January, in a record-breaking show of support for the Section's first evening meeting of the year, which was kindly sponsored by Gaffney, Cline & Associates (GCA).

Engaging approach reduces key project risks in Arctic exploration.



In his pre-dinner presentation **'Attaining "Privilege to Operate" in the Arctic'**, Jon Perry, a Partner in ERM UK, provided a fascinating insight into the unique and diverse moving-target challenges of Greenland facing global players interested in developing its oil and gas resources.

Jon's discussion of the environmental, social and political risks in what he termed a "rapidly evolving system" began with a comprehensive 'Greenland 101', which outlined key geographical, economic and political considerations. Moving on to exploration, he described the country's complex and ever-changing permitting backdrop (see below), but also stressed that *"it's not all about the permitting: given the unique environment and regulatory structure, it can be difficult enough fulfilling Environmental and Social (E&S) permitting requirements in Greenland; however, focusing only on an approvals-based approach is likely to generate significant project risks – both immediate and longer term. Identifying and addressing the non-technical risks is an essential part of attaining 'Privilege to Operate' – a term increasingly used by both supermajors and smaller operators."*

Jon explained that not only is there a significant number of stakeholder groups within Greenland to be considered; there is also a broad range of globally active external stakeholders. Privilege to Operate, then, takes full account of the views and concerns

Greenland Exploration – Permitting backdrop

- Frontier area, highly challenging
- Emerging legislative regime
- Lack of local resources (eg Govt)
- Single authority, with broad powers
- Considerable stakeholder scrutiny
- Setting a high bar for the oil and gas industry, without constraining growth or discouraging E&P activity

Which means...

- Frequent amendments to the legislation and guidance
- Vociferous and often conflicting stakeholder views
- Cherry-picking of standards to quickly build up a suitable legislative framework

of stakeholders and involves minimising major project risks due to delays, protests, legal disputes and media action, which as recent cases have shown, are very real possibilities within the Arctic region. According to a Goldman Sachs study, long project delays are attributed to sustainability issues far more than to either commercial or technical issues, and, unlike many technical problems, non-technical risks have the potential to hold up a project for years. Furthermore, public perception has the potential to escalate issues to the extent that a required solution may be completely

disproportionate to the actual harm to health, safety and the environment – and failure to attain Privilege to Operate will also shape future legislation and the expectation of regulators.

Jon concluded by sharing a number of key lessons, which included:

Understanding Risks

- Identify the critical path items; bring together technical and non-technical perspectives
- How do the views of local people compare with those of authorities, consultees, NGOs and pressure groups?
- What are the potential conflicts and what project impacts could they have?
- How will risk management be maintained across project phases?

Engagement/Disclosure

- Start early to build trust; lack of communication creates suspicion
- Be honest about the options and timelines; balance open disclosure against the risk of raising expectations
- Plan and engage collaboratively (as an industry) to avoid mixed messages and stakeholder fatigue.

Environmental Considerations

- Recognise uncertainty and be open about data gaps
- Link the Environmental Impact Assessment (EIA) with the Social Impact Assessment (SIA) – they are interdependent
- Use local knowledge; make the engagement programme work for you.

The Corporate View

- Consider up-front the full cost of potential delays, local opposition, reputational damage and legal challenges, and try to balance preventative costs against remedial actions (monetising risk)
- Look at internal stage gates: what are the drivers and incentives at handover – are they based on securing approvals, or on the overall 'health' of the project?
- Proactively use the EIA, SIA and Environmental, Social & Health Impact Assessment as a process of internal engagement and alignment.

Key considerations for shale gas development in Europe

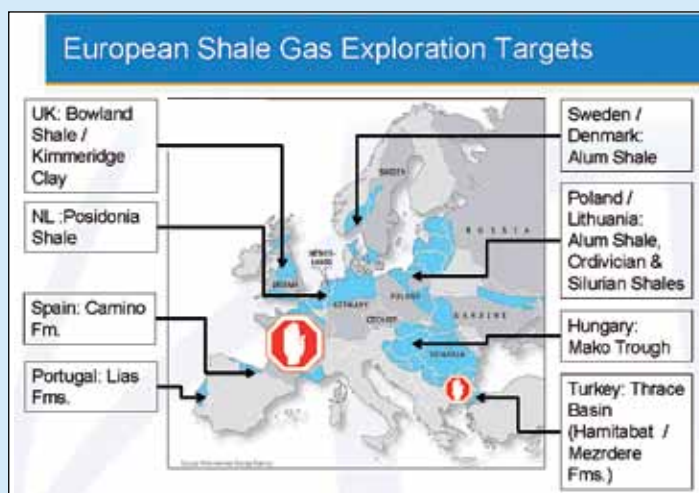
'Shale gas and its potential market in Europe' was the focus of the after-dinner talk, presented by Chris Burns, Senior Geoscientist with GCA.

Chris set the scene with a broad-brush reminder of the basics of unconventional gas and oil, defining shales as "usually marine, deltaic or lacustrine deposits, often laterally extensive, with a wide range of properties and permeability usually on the nanodarcy scale. The gas occurs in natural fractures, pores and adsorbed to mineral or organic matter."

He recapped on the 'unconventional gas story so far' in the US, explaining that of the country's ~24TCF/Y current natural gas production, some 58% (~14 TCF) comes from unconventional reservoirs, including shale, and that the EIA forecasts this to rise to 70% by 2035. The expansion in US unconventional development is driven by new technology, which enables improved horizontal drilling, fracturing and 'Smart' completions, he said. In terms of Barnett shale activity, some 13,500 gas wells were completed between 1997 and 2009. The vast majority of these, since 2004, are high-producing horizontal wells, whose design maximises both wellbore contact with the reservoir and the number of frac stages, resulting in a larger stimulated reservoir volume.

Chris discussed the shale gas potential worldwide and in Europe, and current European shale gas exploration targets (see slide). Taking Poland as an example, he described how shale gas potential is assessed, and he then compared the country's gas production and consumption with those of Spain and the UK, explaining that Poland's gas imports amount to ~380bcf/y, while Spain's and the UK's equate to ~1293bcf/y and 1800bcf/y, respectively. In all of these countries the gap between domestic production

and consumption is widening; he pointed out that according to the Natural Gas Market Review OECD (2008), Europe, overall, is dependent on natural gas imports for 42.7% of its consumption and this is predicted to rise to 54% by 2015.



The next part of the presentation focused on resources, reserves and shale gas development. Chris stated that the increasingly common use of the word 'reserves' in the media in relation to European shale gas is inaccurate: "We know there are copious shale gas **resources** in Europe, but until commerciality is demonstrated there are no European shale gas **reserves**, contrary to what you might read in the press! To book reserves a producing well is required – plus a few other things," he said. These will include a requirement to demonstrate commerciality, and development plans that will typically need to be actioned within five years. He suggested that reserves booking in Europe will probably not start before 2015, with Poland being the likely contender.

He then outlined the process of resources classification and the forecasting techniques used in the unconventional context. Before going on to discuss the planning of a European shale gas project and potential commercial issues involving the influence of gas spot prices on a project's break-even potential, he highlighted some key points to consider:

- Should reserves and resources be defined the same way in unconventional reservoirs as for conventional ones?
- What specific criteria must be met in order for a discovery to be declared?
- What are the potential problems with a US-style project approach using well offset locations?
- Given lack of production history, what is the most appropriate method of predicting EUR?
- Can we accurately measure reservoir parameters?
- Can reservoir simulation assist? Are enough data available?
- How do we estimate recovery factors?

Finally, Chris discussed possible barriers to shale gas development in Europe. These include political, environmental and social issues, particularly around the well pad and frac spread surface footprints, the use of water and potentially hazardous chemicals, and induced seismicity – although, as he pointed out, there are many measures that can be put in place to mitigate environmental concerns. Another possible barrier comes in the shape of global shale gas/LNG competition, notably from the US, North Africa and Russia.

He concluded: "There is certainly a potential market within Europe for shale (and other unconventional) gas. The current problem seems to be proving that it can be extracted at economically viable rates. However, we need to start thinking now about how to quantify them to be in a position to justify development, and we also need to understand the development costs (including political, environmental and social issues) and break-even prices – while at the same time bearing in mind that there is competition from elsewhere in the world."

You can download both presentations from the SPE London Past Events section at: <http://london.spe.org>

Financing challenges for the small cap company



Majid Shafiq, MD Corporate Finance at FirstEnergy Capital, will be presenting on capital raising under constrained market conditions, at the SPE London 2nd Annual Conference and Exhibition. In this interview he discusses the financing challenges faced by small cap oil and gas firms.

Why has the market remained so 'uncertain' for those managing oil and gas portfolios?

The main problem over the last 12 to 18 months for the small cap space has been that financial markets have been almost closed, with the equity markets proving particularly difficult in 2012. On top of that, risks in countries where oil and gas firms operate have in many instances increased – the political turmoil in North Africa and the fiscal treatment of assets sales in sub-Saharan Africa being recent examples.

What are the current issues impacting on the raising of capital to fund North Sea and global opportunities?

Tapping into North Sea opportunities is expensive as it entails offshore and sometimes deepwater operations. The North Sea is also extremely competitive and heavily explored, making further discoveries of large oil and gas fields less likely. The region has seen some high profile failures in recent years, resulting in pull-back from North American investors. London-based investors are also looking for higher potential returns from regions like Africa and the Middle East, where we have seen some very good exploration successes.

How do these factors impact specifically on oil and gas operators, investors, and the wider industry?

Operators often need to rationalise their portfolios because the finance market, particularly equity but also debt, remains difficult. Meanwhile, equity fund managers have been much more selective because they've been suffering from redemption calls from their investors. However, we have seen more activity in the equity markets this year. There is a knock-on effect on the service sector, particularly in North America where low

gas prices have impacted the utilisation rates of drilling rigs and other service company equipment.

How can current approaches to portfolio management be improved?

You should always be looking to manage your portfolio creatively in order to ensure it remains attractive to potential investors. Asset sales and farm-outs should be considered as an alternative and often lower cost of financing than issuing equity. It's also essential to have financing in place so that you are ready to undertake activities you are committed to. The companies that are running into problems are the ones that leave it too late. The secret is to have a solution in place well in advance of an obligation to drill – whether you want to fund it 100 per cent, bring in an equity or strategic partner, or farm out part of the asset.

How can oil & gas companies make themselves more attractive to potential investors?

In the current market investors are now looking to tick a lot more boxes before they make an investment decision. They want companies that have more liquidity and that offer the potential for a high near term return. Oil and gas companies therefore need to spread risk and capital across more assets. They should also be continually looking for ways to rationalise their portfolio, to ensure attractive acreage and geology is included in their asset base.

The SPE London Section 2nd Annual Conference and Exhibition, 'Managing Oil & Gas Portfolios in Uncertain Markets' will be held on 22-23 May 2013, at Savoy Place. The conference programme targets senior industry and City professionals working in sectors including corporate finance, asset acquisitions and divestitures, corporate mergers and acquisitions, investment analysis, equity research, portfolio management, business development, and valuation of oil and gas assets.

For more information go to www.SPELondonConference.com or follow the conference on Twitter: @SPELondonconf



London Section

25 April

Industry Considerations in High Risk Areas

Companies face technical and non-technical obstacles as they expand their portfolio; new opportunities usually come from areas of latent conflicts with high political, economic and fiscal risk. Our 2013 Regional Focus seminar will discuss how the industry addresses project challenges where other industries don't dare to go, with examples from different locations.

**PROCUREMENT
OPERATIONAL &
TECHNICAL CHALLENGES**

**SECURITY & PIRACY
RISK & PORTFOLIO
MANAGEMENT**



BOOKINGS
Kate McMillan
(katespe@aol.com)

SPONSORSHIP
Alejandro Primera
(alepri@spemail.org)

London
Geological Society
£220 member
£250 non-member
£35 student

Continuing Education Seminars
Opportunities in a challenging and fast-paced industry

7th Annual Women in Energy Seminar 9 May 2013 London South Bank University (8.30am - 6pm)

'Celebrate the differences - the unique qualities women bring to the workplace'

If you are interested in sponsoring this event, or wish to book your place, please contact Kate McMillan at: katespe@aol.com

Bored of the mundane?

SHAKE UP YOUR CAREER

WITH FAIRFIELD ENERGY

Principal Reservoir Engineer

Ref: 1080460, Staines-upon-Thames

Working with the Management team, your focus will be to enhance the value of existing assets and to grow the business through acquisition. This will be achieved by applying reservoir engineering expertise in the evaluation and justification of new business and development opportunities, as well as licence round applications and will encompass technical meeting representation and managing relations with partners, DECC and investors.

Senior Operations Reservoir Engineer

Ref: 1080560, Aberdeen

As reservoir production focal point for the Dunlin Area, you will be responsible for the delivery of the reservoir management plan in pursuit of optimum production from the asset. The role will require effective reservoir engineering skills and a thorough understanding of surveillance data and will encompass well performance optimisation, co-ordination of reservoir engineering support activities and maintenance and delivery of production forecasting.

Principal Production Geologist

Ref: 1080550, Aberdeen

As geological focal point for the Dunlin Area, you will provide strategic and technical direction for geological activity as well as oversight of operational geology across the company. You will undertake technical work and manage external projects and contractors to provide geological support to the Dunlin Area Plan and will plan, manage and implement geological data gathering and evaluation and geological work programmes.

hoggett**bowers**

We are seeking subsurface professionals for these pivotal roles within our teams in Aberdeen and Staines-upon-Thames. To apply, please email: industry@hoggett-bowers.com

www.fairfield-energy.com



FairfieldEnergy



18 April,
Aberdeen Exhibition
and Conference Centre
AB23 8BL

Book your Early Bird
discounted place by
21 March!

The popular bi-annual learning event is aimed at drilling, completions, project, well integrity, environmental and commercial personnel who wish to gain a deeper insight into current challenges and solutions in well abandonment and suspension. This year's Seminar will include interactive sessions chaired by Graeme Rae (Talisman Energy), which explore the well abandonment market, regulations, challenges and solutions. Case studies by a range of UK and Norway operators and service providers include:

- The Brent experience: considerations for a successful plug and abandonment (P&A) campaign
- Statoil TOGI subsea P&A project
- Zonal isolation: well barriers and assurance on BP's North Sea abandonments
- Incorporating abandonment /suspension into the well design
- Rigless – cutting the cost of well abandonments
- Platform based well abandonment with HWO unit
- P&A of subsea completed wells – can this be done from a mono-hull vessel?
- P&A cementing technology: reliable long-term isolation
- Developments in non-traditional plug and abandonment methods.

A number of brief Technology Focus presentations will also be made and an accompanying exhibition will showcase innovations and solutions from across the industry.

Information at: www.spe-uk.org

Book at: www.rodgerandco.com

Volunteers wanted!

SPE Aberdeen Drilling Automation Seminar - 9 October 2013

Interested in drilling automation? Please consider volunteering to join the steering committee for this exciting new Aberdeen-based seminar.

For more information, contact: jane.rodger@rodgerandco.com

SPE CONSULTANTS LISTING

Peter Aird – MSc, CEng – deepwater/HPHT drilling supervision, well engineering, training/ coaching consultant • email: kingdom_drilling@msn.com • www.kingdomdrilling.co.uk

David Aron – Development studies, negotiations, evaluations, expert witness • tel: 020 8347 3498 • fax: 020 8347 3499 • email: davidaron@pdc.co.uk • Petroleum Development Consultants Ltd, Stanhope House, 4 – 8 Highgate High Street, London N6 5JL • www.pdc.co.uk

Alasdair Campbell – Completion design and technology specialist, well design studies, project management services • tel: 01358 720703 • mob: 07981 381294 • email: ali@wellwizards.com • www.wellwizards.com • Unit 10, Balmacassie Commercial Centre, Ellon, Aberdeenshire, AB41 8QR

Maurice Cotterill – CEng, FIMMM – exHPHT expertise, well design, advanced casing/tubing analysis, studies/reviews • email: maurice.cotterill@sede.co.uk

Rick Hoskins – Cementing expert & expert witness (Macondo), solutions that prevent gas flow after cementing • tel: 01330 860772 • mob: 07885 436671 • email: cementing@aol.com • Cementing Specialists Ltd, Craigshannoch Lodge, Midmar, Aberdeenshire AB51 7LX

Steinar S Johansen – Expert reservoir engineer and petroleum economist • reservoir studies and simulation, datarooms, reserves assessment, field development, petroleum economics • tel: +47 97464427 • email: schjohan@online.no

Kwabena Kwakwa – BSc, MPhil – 30yrs+ experienced applied geomechanics specialist • wellbore stability, sand production, depletion effects, fracturing design, etc • tel: +44 (0)1932 560484 • mob: +44 (0)7989 383084 • email: kkwakwa@energy-tech.co.uk

Merlin Extended Reach Drilling – Feasibility/design/training, equipment specification, risk & cost reduction; wellbore stability solutions; Spitfire flypasts! • tel: 01738 627922 • email: ian.hutchison@MerlinERD.com • www.MerlinERD.com

Oleum Khaos Ltd – First quartile petrophysics, 30+ years experience • field studies, well planning, peer assist/ review, project management • tel: +44 (0)7852 554496 • email: info@oleumkhaos.com • www.oleumkhaos.com

Petrophase Ltd – Reservoir fluid studies, sampling/PVT programmes, PVT modelling, data QC, compositional gradients, contaminants, allocation, training • tel: +44 (0)7771 881182 • email: info@petrophase.com • www.petrophase.com • Brian Moffatt, 34 Oaklands Drive, Reading, Berks, RG41 2SB

Hussain Rabia – BSc, PhD – HPHT well design and verification, well engineering/advanced casing design, wellbore stability, studies/training • email: info@entrac-petroleum.com • www.entrac-petroleum.com

Henry Smith – CEng – 25yrs experience. Cased hole log analysis and training, well test analysis, well design and production optimisation • tel: +44 (0)7946 547059 • email: hsmith@hks-tech.com • www.hks-tech.com

Fabrice Toussaint – Petroleum & reservoir engineering solutions, well test analysis DFIT PITA DST CCT, WBS & rate deconvolution • tel: +44 (0)7861 770897 • email: contact@dinovapetroleum.com • www.dinovapetroleum.com • Dinova Petroleum Ltd, 74 Lambton Road, London, SW20 0LP

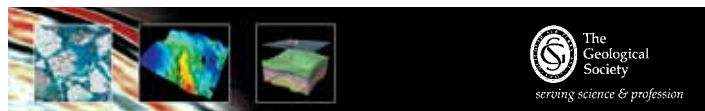
Peter Wright – all aspects of petroleum economics, including financial/fiscal modelling, business planning, acquisitions/valuations and training/mentoring • 25 years industry experience • tel: +44 (0)7963 441076 • email: peter.wright@equad.com

Haoran Zhang – BSc, MPhil, PhD – Over 28 years' experience: prospect evaluation, M&A, field development planning, reservoir engineering, simulation, reserves, peer reviews • tel: +44(0)7827 089527 • email: haoran@petengplus.com or info@petengplus.com • www.petengplus.com • PetEng Plus Limited, 28 Evergreen Way, Wokingham, Berkshire RG41 4BX

To appear in this listing, please write to Allan Montgomery at M&M Media, 24 Cairnquheen Gardens, Aberdeen, AB15 5HJ, with: your contact details • up to TEN words describing your services • advance payment by cheque for £10 inc VAT x the number of months you are booking a listing (cheque payable to M&M Media).

* NEXT EVENT * NEXT EVENT *

FORTHCOMING EVENTS	
* T N E E T X E N * T N E E T X E N *	LONDON
	• 26 March (5-9pm) (Before dinner): 'Reservoir Fluid (PVT) Analysis - Value to Appraisal/Field Development Planning'; Brian Moffatt (Petrophase) (After dinner): 'Tullow Ghana – deepwater ERD experience', Fraser Lawson (Tullow Ghana Ltd) VENUE: Geological Society, Piccadilly, London
	• 25 April: Regional Focus – 'Industry considerations in high risk areas' VENUE: Geological Society, Piccadilly, London
	• 9 May: 7th Annual Women in Energy Seminar VENUE: London South Bank University
	• 22-23 May: SPE London 2nd Annual Conference & Exhibition – 'Managing oil & gas portfolios in uncertain markets' VENUE: Savoy Place, London
	For details of all SPE London events, visit: www.katemcmillan.co.uk and www.spe-uk.org 'London Events'. If you would like to sponsor an SPE London event, please email Mo_Mansoori@nexeninc.com
	ABERDEEN
	• 27 March: 'Tullow Ghana – deepwater ERD experience', Fraser Lawson (Tullow Ghana Ltd) VENUE: 6.30pm Douglas Hotel, Market Street, Aberdeen
	• 18 April: SPE Aberdeen 4th European Well Abandonment Seminar VENUE: Aberdeen Exhibition and Conference Centre
	EDINBURGH
	• 9 April: 'Sand Special Night' (Senenergy and Yala Peak). VENUE: to be confirmed at: www.spe-uk.org (Aberdeen Events)
	For details of all SPE Aberdeen and Edinburgh events, please visit: www.spe-uk.org 'Aberdeen Events' or contact Rodger and Co: spe@rodgerandco.com
	SPE EUROPE
	• 16- 18 April: SPE European HSE Conference and Exhibition VENUE: Millennium Gloucester Hotel, London www.spe.org/events/ehse



Corporate Supporters:



Organising Committee:

Bernie Vining
Baker Hughes

Kate Gibbons
Baker Hughes

Bill Morgan
Morgan Geoscience
Consulting, LLC

Dan Bosence
Royal Holloway
University of London

Daniel Le Heron
Royal Holloway
University of London

Erwan Le Ber
Royal Holloway
University of London

Tim Pritchard
BG Group

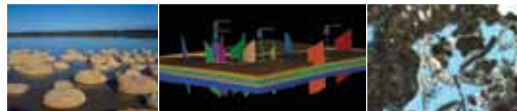
Conference Sponsors:



Registration Open

Microbial Carbonates in Space and Time: Implications for Global Exploration and Production 19-20 June, 2013

The Geological Society, Burlington House, Piccadilly, London



Microbial carbonates occur globally throughout the stratigraphic column, from the Archean to the present-day and occur in a wide range of environments. They constitute principal reservoirs of the pre-salt play offshore Brazil, producing fields in the Middle East, and are the targets of the pre-salt play offshore Angola. Further development of our understanding and knowledge of microbial carbonates has significant implications for future worldwide exploration and production of these intriguing deposits.

Key themes to be explored by the speakers over the 2 day conference include:

- Regional and Basin settings, in particular new advances in the understanding of the pre-salt south Atlantic margins.
- Reservoir Studies: from Gulf of Mexico, to Kazakhstan (Karachaganak, Tengiz and Korolev fields) and Oman (South Oman Salt Basin and analogue).
- Analogues: Understanding of frontier Precambrian petroleum systems, with analogue studies in Namibia to well-known reservoirs from Oman.
- Depositional and environmental controls illustrated by a range of studies from the Great Salt Lake, Eocene Green River to the Permian Zechstein in the North Sea.
- Texture and diagenesis: unlocking the conundrum of texture, diagenesis, pore systems and preservational vs. depositional environment.
- Petrophysical Characterisation: challenges in sampling and measurements to techniques for 3D visualisation of porosity network.

Keynote Speakers:

Stanley Awramik: Microbialites in Time and Space.
Giovanna Della Porta: Non-marine carbonates: variety and porosity of microbially mediated and abiotic fabrics.
Paul Wright: To be or Not to be, Microbial: does it matter?

Registration:

For registration, more information and to view a listing of the presentations, go to www.geolsoc.org.uk/carbonates13 or contact: Steve Whalley, The Geological Society, Burlington House, Piccadilly, London W1J 0BG. T:020 7434 9944 F:020 7494 0579

At the forefront of petroleum geoscience

www.geolsoc.org.uk/petroleum



High Quality Training for E&P Professionals

Coming Up – Register online now!

Carbonate Reservoir Characterisation (GG26)

April 7-11, Abu Dhabi (UAE)

Carbonate Geology for

Oil and Gas Exploration & Development (GG02)

April 8-12, Vienna (Austria)

Geothermal Drilling Technology (DR13)

April 22-24, Vienna (Austria)

Waterflooding: Performance Predictions and Surveillance (RE28)

May 5-9, Dubai (UAE)

Production Chemistry for Non-Production Chemists (IC07)

May 13-17, Vienna (Austria)

Liquid-Rich Shale Well Modelling and Optimisation (RE30)

May 27-31, Trondheim (Norway)



Visit
www.hoteng.com
for our 2013
training schedule!



**Engineering Courses that increase your ability to
solve today's completion design and production
technology challenges**

Completion Design

Operations & Equipment; Tubing
Stress Analysis; Production
System Modelling (PROSPER*)
Dates: 6th - 10th May / 30th
Sept - 4th Oct

Artificial Lift Design

Gas Lift; ESP[^]; Jet Pump^{^^}.
Dates: 3rd - 7th June / 18th -
22nd Nov

Intro to Well Integrity

Well construction; regulation;
management; remediation
Dates: 14th May / 8th Oct

Other Courses

Gas Lift Workshop; PROSPER*
refresher; Intro to the E&P
industry for support staff. Dates
available for "in-house" delivery

Instructor: Cameron Laing
(35yrs PE experience)

Location: Aberdeen

Detailed Course Content:

www.letstrain.co.uk

Book: www.rodgerandco.com

T: +44 (0)1224 495051

[^] in association with Alastair Baillie of

^{^^} with Joe Allan of PTC

* www.petex.com

Laing Engineering & Training Services
Releasing the Power of Production Technology

T: 01358 723534 / 07904 302644

CELEBRATING 100 YEARS OF OIL TECHNOLOGY AT IMPERIAL COLLEGE

Imperial College
London



100 Years and Beyond:

Future Petroleum Science & Technology Drivers



Date: 23-24 September 2013

Venue: Imperial College London

This 2-day meeting will celebrate 100 years of petroleum-related science and engineering education at Imperial College. With a list of distinguished speakers, we aim to mark this landmark achievement by looking forward to the next 100 years, with emphasis on discussing key future drivers and related energy supply issues. The meeting will be wide-ranging, with presentations covering global energy trends, future geoscience and engineering technologies, unconventional hydrocarbon resources, carbon sequestration and climate change.

We have an outstanding group of confirmed speakers, including:

- Lord Ron Oxburgh
- Lord John Browne
- Professor Scott Tinker (Director, Bureau of Economic Geology, Texas)
- Dr. Bruce Levell (VP Emerging Technologies, Shell)
- Malcolm Brown (Senior VP Exploration, BG Group)
- Bryan Lovell (former President, Geological Society of London)
- Professor Joe Cartwright (University of Oxford)
- Emeritus Professor John Woods (Imperial College & the 2007 Joint Nobel Peace Prize Winner)
- Mike Daly (VP Exploration, BP)

Further information and registration details:

Further information and registration details can be found at:
www.geolsoc.org.uk/oilcentenary13

or contact Steve Whalley at the Geological Society, using the following email address: steve.whalley@geolsoc.org.uk

The meeting is jointly convened by Imperial College London and by The Geological Society of London, supported by the American Association of Petroleum Geologists, The Society of Petroleum Engineers and by the Petroleum Exploration Society of Great Britain.

IN ASSOCIATION WITH

PES GB



London Chapter

WE ARE THE ARCHITECTS OF WHAT'S TO COME

OUTSTANDING CAREER OPPORTUNITIES AT TAQA

We are the engineers of change. The explorers. The big thinkers. We are collaborators, communicators, cultivators. We are pioneers – ready to shape the future and shake up the industry. We believe in doing things the right way, not the conventional way. And without needless bureaucracy holding us back, we are free to find the technologies, ideas and discoveries that will take us forward. This is your chance to be part of it. To achieve new goals and new successes. Because we mean business. We mean difference. We mean energy. Build a more rewarding career at wemeanenergy.co.uk

WE MEAN ENERGY

