Congratulations to Imperial College London graduate and SPE London member, Percy Obeahon, winner of this year’s OPC Well Test Analysis Award, proudly sponsored by Oilfield Production Consultants (OPC) Ltd. Continued on page 3

SPE London announces 2nd Annual Conference and Exhibition – page 12

Finalists have been announced for this year’s Offshore Achievement Awards, which celebrate the highest-performing companies and individuals within the energy industry.

The 2013 awards, launched in October by SPE Aberdeen, received a high level of interest across each of the categories. They recognise exceptional talent and success in categories including overall company performance, commitment to safety and innovation, and individual contribution to the energy sector. TAQA Bratani is supporting the awards as main sponsor for a second successive year. Continued on page 3

This year’s OAA trophy design winner, Ewan Gray, is pictured with shortlisted fellow Robert Gordon University students Lucy Jamieson, Cara Walker and Isla Chlebowska. Ewan, from Orkney, says his design was inspired by relief maps of North Sea oilfields. The finished article will be made from a combination of wood, glass and metal. Third year students studying 3-Dimensional Design at Gray’s School of Art were set the challenge in November by SPE Aberdeen. The competition was introduced as part of SPE Aberdeen’s successful re-launch of the awards and it has now been incorporated into the 3-Dimensional Design course to give students a real-life design brief. Ewan says: “I am honoured that my design will be presented to winners of these prestigious awards. Taking part in the project has given me a working example of how I can use my skills when I leave university and I am grateful to SPE Aberdeen for the opportunity to build my portfolio.”
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.

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The copy deadline for the March 2013 issue is 18 February 2013, with publication scheduled for 6 March 2013.

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**SPE PEOPLE**

**Michael Heaney**
SPE Aberdeen Continuing Education Committee Chair

When and why did you join the oil and gas industry and what's been your career path to date?

I left university in 1976, at a time when people would stop you in the street and offer you a job in the oil industry. Within a matter of weeks I was an offshore Commissioning Engineer in the Forties field. After 12 years at the sharp end I came onshore to an R&D role, developing well test tools. I then moved into oilfield computer software, followed by business development and service quality assurance, and finally managing SAP deployments. I was then told I had done such a good job that I’d made myself redundant. I had been encouraging my team to continue their career development, so to set a good example, I went back to university to complete my Masters degree and set up my own (current) consultancy, Benchwhistler Associates Ltd, to deliver Knowledge Harvesting and Employee Engagement – to make people happier, wiser and more productive in their work. I also get requests for longer-term interim management roles to help plug the gaps in smaller companies.

Have you had any mentors during your career?

My first boss told me: “If you don’t know what you are doing, we don’t want you out there.” That still applies today. My last boss was also inspirational: he always took time to listen and to explain how quality and customer satisfaction are key to continued opportunity and success.

Why did you join SPE? Has it lived up to your expectations?

If I had known how useful and supportive the SPE is, I would have joined earlier – and saved a small fortune by buying life membership. The greatest benefit of active SPE membership is the access to a wide range of people. Their hard-won expertise is freely shared with other members and that’s invaluable to anyone building a career in this industry.

What does being Aberdeen Section Continuing Education Chair involve?

Working with volunteers to plan, organise and deliver a wide selection of conferences and events that address our members’ need to stay current within this fast-moving industry and to learn new ideas.

How do you choose to switch off from work?

As a student I was a founder member of the Aberdeen University Draught Stout Appreciation Society. I still occasionally work on developing my taste for dark beers.

Which three words do you think best describe you?

Never too serious. I daren’t repeat what I’ve heard others call me.

Any life-changing moments you’d like to share?

“I’ve seen things you people wouldn’t believe. Attack ships on fire off the shoulder of Orion… c-beams glittering in the dark… All those moments will be lost in time, like tears in rain…” Oh no – that’s a speech from Blade Runner.

An oil industry career can put you in many strange and wonderful places. I have great memories of walking at dawn in the Abu Dhabi desert, being arrested in Vietnam, and working in the heat of a Singapore summer. Just a few months ago I was in Beijing sharing a pot of jasmine tea and meeting people with an entirely different world view. What a privilege.

Who (from history or the world today) inspires you most and why?

I’m a big fan of Niccolo Machiavelli. He was a brilliant diplomat in dangerous times and his political writings have been greatly misunderstood. He spoke truth to power and ended up getting tortured for his trouble. But his books are still in print 500 years on, so his ideas still resonate today.

What would you like to be doing in 10 years’ time?

If I’m still breathing that will be a good start. I should really start on that blockbuster novel I’ve been mulling over for the last thirty years. Perhaps detailed location research in Paris, Venice, Denver and Dublin. I hear they do a half-decent black beer there.
Ian Phillips, director of CO₂ Deepstore Limited and the SPE board member responsible for the organisation of the awards, says: “Our re-launch of the Awards in 2011-12 was extremely successful and it was important for SPE Aberdeen, as the organisers, to continue to build upon this platform. The level of interest we received this year demonstrates that the awards are a highlight of the energy industry calendar.”

The black tie awards evening will take place on Thursday 21 March 2013, at the Aberdeen Exhibition and Conference Centre. Winners will be announced on the evening and presented with a bespoke trophy designed by Robert Gordon University student Ewan Gray (see front page). Back by popular demand and fresh from his ‘The Story Continues…’ Tour, comedian Kevin Bridges will return to host this year’s awards ceremony.

Leo Koot, Managing Director of TAQA Bratani, says: “We are delighted to be supporting the Offshore Achievement Awards for a second year. It is of huge importance that we recognise success and high performers, and also encourage and foster a culture of innovation to ensure the long-term sustainability of our industry.”

The OAA finalists in each category are:

**Emerging Technology (sponsored by Nexen)**
- Champion Technologies; SPEX Group; WEB Rigging Services

**The Innovator (sponsored by BG Group)**
- Red Spider Technology; Stork Technical Services; Tendeka

**Safety Innovations (sponsored by Petrofac)**
- Houlder; Reflex Marine; Stork Technical Services

**Export Achievement (sponsored by Champion Technologies)**
- ASET International Oil & Gas Training Academy;
  - Craig International Supplies; Online Electronics

**Working Together (sponsored by EnQuest)**
- Decom North Sea; Explo; Maersk – Gryphon Area Recovery Project

**Young Professional (sponsored by Maersk Oil)**
- Neil Clark, Nexen; Barry Mitchell, Wood Group PSN; Graham Skinner, KCA DEUTAG Drilling

**Great Small Company (sponsored by Petrofac)**
- Houlder; Reflex Marine; Stork Technical Services

**Great Large Company (sponsored by Wood Group PSN)**
- Axis Well Technology; Bibby Offshore; The Craig Group

**Significant Contribution (sponsored by Aker Solutions)**
- To be announced at the awards ceremony

As well as sponsorship from TAQA Bratani and media sponsorship from the Press & Journal, the Offshore Achievement Awards are also supported by Dana Petroleum, Mearns & Gill, thinkPR, J. Thomson Colour Printers, AREG, Vision Events, Gray’s School of Art, EnerMech, Offshore Engineer and Recharge.

For more information on the event or to enquire about table booking, please visit www.spe-oaa.org, or call: + 44 (0)1224 646311.

**WELL TESTED!** *(continued from page 1)*

By Maya Hussain, OPC

A lot of people dream of receiving a big cheque, but for recent graduate Percy, in November it became a reality! The annual Well Test Analysis Award of £500 is offered by OPC to the Imperial College MSc Petroleum Engineering student whose thesis most impresses Department Chairman Professor Alain Gringarten and OPC.

Percy, now a Reservoir Engineer at Shell Exploration and Production Companies in Nigeria, focused his thesis on history matching for the heavily-faulted Egret Field, in the North Sea. In recent times, fault seal breakdown is seen to have significant impact on recovery. The ability to predict these impacts on well productivity is critical to optimal well placement, reservoir management and field development decisions, particularly for HP/HT deep water developments. Percy’s thesis fills the knowledge gaps in dynamic fault seal modelling by presenting a new concept on how to characterise the sealing nature of reservoir boundaries and achieve history matches in reservoirs where seal factors change dynamically. This was achieved using pressure transient analysis, production analysis and the deconvolution method. The report demonstrates that using well test interpretation results and a systematic approach to fault seal analysis results in a history-matched model that explains how fault seal breakdown can be constructed.

Piers Johnson, OPC Managing Director, said: “I have a long-standing relationship with Professor Gringarten, as we’ve been doing well testing all our lives. OPC is pleased to continue to offer this prestigious prize and we wish to congratulate Percy, whose thesis was chosen as being a significant contribution to reservoir characterisation from well test interpretation.”

Professor Gringarten, Director of the Centre for Petroleum Studies at Imperial College, added: “We are grateful to OPC for their continuing support. They are an example of what companies can do to encourage and reward excellence at universities.”

OPC is an independently owned, globally renowned leader in the provision of professional expertise, management and support to the E&P industry.
London

A heady mix of technical and business finance expertise – giving a flavour of the Section’s forthcoming Annual Conference and Exhibition (see page 12) – will take centre stage at SPE London’s monthly evening meeting, on 26 February, at the Geological Society, Piccadilly.

Sacha Sarshar, of Caltec, will make a welcome return to present ‘Subsea production and flow assurance’, which discusses the main reasons for subsea development in deep water and hostile environments, and the challenges related to subsea production, subsea separation, subsea boosting systems (gas and liquids), and long distance transport of fluids.

Some subsea developments also involve production from tight, fragmented reservoirs which pose further challenges to maximise total recovery. Reliability of subsea production systems, and inspection, maintenance and repair (IMR) issues are among key factors which influence the design and selection of subsea production systems. The vision and realities are compelling, and the talk covers existing subsea technologies and the gaps – hopefully prompting some lively discussion by experts and enthusiasts in this challenging and exciting field.

Sacha, Chief Technology Officer and co-founder of Caltec, has more than 40 years’ experience in the oil and gas industry. He started out as a Production Engineer in the Middle East oilfields and later worked for a number of engineering companies involved in the development, design and commissioning of oil and gas production systems and subsea production and separation systems. He has more than 14 patents on jet pumps and compact separation systems, and has won several awards for innovation, including the prestigious Award for Innovation from the Royal Society.

Caltec is an innovative product development and supply company which is part of the Production Solutions division of Petrofac. Caltec’s speciality is the design, supply and applications of surface jet pumps, and compact separation systems, known as I-SEP/HI-SEP, for a wide range of duties. The company holds numerous patents on these products and has won several awards for innovation.

Following the networking buffet, Will Holland, of Macquarie Energy Capital, will share some valuable advice on ‘Attracting finance – traps for young, and old players’.

Small Cap E&P companies often struggle to raise capital, particularly in these uncertain economic times. Will’s talk will investigate: the different types of finance available to Upstream E&P companies; who invests in the sector; the financial products each type of investor can provide, and the qualities different investors typically look for when investing in Upstream oil and gas companies. The insights provided during the talk will help prevent both technical and commercial company executives from falling into the common ‘traps’ often encountered when pitching their company to the investment community.

Will Holland is an Associate Director of Macquarie Energy Capital. He has worked in the oil and gas industry for more than 15 years and has spent the last six years at Macquarie investing in Small Cap Upstream E&P companies. After graduating Bachelor of Mechanical Engineering from Warwick University, he started his career with Halliburton as a Stimulation and Cementing Engineer in the North Sea before moving into business development in the West Africa region. He completed an MBA from Heriot Watt University in 2003 and following a period working on corporate financial control projects, joined the Energy Capital team at Macquarie Bank’s London office.

Macquarie Energy Capital is a specialist financing group within Macquarie Bank Ltd that provides debt and equity capital for Upstream oil and gas companies. The group consists of 40 professionals, including engineers of various Upstream disciplines, providing the team with extensive petroleum industry experience. In addition, Macquarie provides tailored commodity price risk management solutions to its energy customers.

Before dinner: 5.30-6.30pm
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/PESG/El members, £44 non-members, £19 unemployed members, £5 students booking by Friday 22 February (£19 after).

Aberdeen

Rob Kuyper, of TAQA Bratani, is guest speaker at the SPE Aberdeen monthly meeting, on 27 February (6.00 for 6.30-8.30pm), at the Douglas Hotel.

In his presentation, ‘Cormorant East – UKCS record for oil field development: 85 days from discovery to first oil’, Rob will describe TAQA’s discovery of the Cormorant East oil field, in October 2012, by a well drilled from its North Cormorant platform, in the Northern North Sea. Cormorant East is located 3.5km north-east of North Cormorant.

The route from mapping the prospect to drilling and production required a strong co-operation between TAQA and DECC. The presentation will share DECC’s support with respect to field determination and corresponding tax treatment, which allowed the drilling to become commercially attractive. It will also discuss how the record time from discovery to new-field status was achieved.

Rob Kuyper is Development Manager at TAQA Bratani. Rob joined the company in 2008, during the acquisition of a large portfolio of mature oil fields from Shell which established TAQA as a new E&P operator in the UK. During 2009 and 2010, Rob led the Subsurface and Wells department to break the production decline and increase production from the mature fields. He became Development Manager in 2011. Prior to joining TAQA, Rob worked for Shell in various roles in Syria, Norway, UK and The Netherlands. His background is in Reservoir Engineering and Development Planning and he holds a PhD with Honours in Applied Physics from Delft University of Technology.

TAQA Bratani Limited – wholly-owned by the Abu Dhabi National Energy Company PJSC (TAQA) – was incorporated in 2006 and is an Aberdeen-based E&P company working in the UKCS. In 2008 TAQA Bratani acquired a portfolio of mature oil fields in the Northern North Sea, previously operated by Shell, in the biggest UK E&P acquisition to date. In 2012, TAQA Bratani added a portfolio of fields in the Central North Sea, previously owned by BP.

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

• Technical presentations are now invited for SPE Aberdeen’s 2013/14 monthly dinner meetings programme. If you have a presentation which may interest your colleagues, the SPE Aberdeen Programme Committee would welcome a short summary – please submit to jane.rodger@rodgerandco.com, tel: 01224 495051.
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Petroleum Group Silver Medal & Young Petroleum Geoscientist Award
Nominations

Nominations for the Petroleum Group’s annual awards are now open.

Silver Medal Award

The Petroleum Group Silver Medal is a yearly award presented to individuals with a geoscience background who have made outstanding contributions to the petroleum industry. It can be awarded for excellence in petroleum geoscience and/or management of oil-finding activities. The winner will be presented with the medal at the Petroleum Group Annual Dinner on 13th of June 2013.

Young Petroleum Geoscientist Award

To recognise young talent, the future of our industry, the Petroleum Group will be awarding the medal at their 2013 Annual Dinner. Nominations should be under 35 and either have already made a significant contribution to the understanding of petroleum geoscience or be an emerging talent who is making a significant impact in the field. The winner will be presented with the medal at the Petroleum Group Annual Dinner on the 13th June 2013. Unsuccessful nominees will be mentioned in the Chair’s speech at the Annual Dinner and will also be mentioned in the Petroleum Group E-Newsletter.

Submissions must be made by 31 March 2013
For further details please visit the Petroleum Group web pages:
www.geoloci.org.uk/petroleum or contact Steve Whalley by phone:
+44 (0)20 7532 0880, or email: steve.whalley@geoloc.org.uk

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Robert O’Keeffe, Associate Director of DNV, said that building trust and has been a prominent theme of the Unconventional Gas Conference. With significant concerns around the impact of shale gas, particularly on the environment, the need for transparency and management of risks has moved the debate to cover wider issues and concerns, not only from within the industry but also from local communities. There is also a greater confidence through independent verification will be crucial to gaining public acceptance of unconventional gas. “By using a risk management framework to demonstrate the management of shale gas operations in a comprehensive, balanced and transparent way, operators will be able to earn the necessary social licence to operate”.

Keith Mackie described a growing appetite among ITF members to explore the successes and challenges of the unconventional gas industry. “The development of improved reservoir characterisation techniques is key to allowing operators to construct effective development plans. Using our analysis and research, we can give approximate reservoir properties within a day, which could take a year using conventional core analysis techniques. This clearly has an impact on the rate of unconventional gas can be developed.”

Conference Chairman Tom Pickering said there had been a shift in public interest over the past year: “The conference, building on last year’s success, has moved the debate to cover wider issues and concerns, not only from within the industry but also from local communities. There is also a greater level of interest and involvement from around the globe, where exploration work is under way in many regions, and where the US in particular is reaping the benefits from an indigenous supply of natural gas.”

The event was organised by an industry-led committee with support from Aberdeen City Council, ITF and SPE Aberdeen. Delegates heard first-hand from major operators and service companies, including DNV, Schlumberger, Tullow Oil, Schlumberger, Imperial College London, Oilfield Production Consultants (OPC), Antium Frontfield, Dong Energy, Petroceltic and Fugro. In keeping with tradition, Piers Johnson, Managing Director of OPC, kicked things off with his welcome speech and industry overview, and the successful day ended with sponsored networking drinks.

Organised by the Section’s Continuing Education Committee, the full-day seminar is aimed at people working in an E&P environment, who are new to the industry and would benefit from a basic understanding of exploration and production processes. This year’s event sold out a month in advance and, with 15 delegates on the waiting list, has prompted the search for a new, larger venue for next year.

What makes this seminar popular is the unique mix of volunteer speakers sourced from both academic and industry backgrounds, who impart their specialist knowledge across all Upstream disciplines. Topics ranged from Introduction to Geology, to Reservoir Engineering and Petroleum Economics. Speakers hailed from Tullow Oil, Schlumberger, Imperial College London, Oilfield Production Consultants (OPC), Antium Frontfield, Dong Energy, Petroceltic and Fugro. In keeping with tradition, Piers Johnson, Managing Director of OPC, kicked things off with his welcome speech and industry overview, and the successful day ended with sponsored networking drinks.

Feedback from attendees included comments such as “Quite informative for the ones relatively new in the oil and gas industry,” and “Very useful and interesting. Gives a good overview of oil and gas. It is also adapted to all types of people (engineers and non-engineers).”

Rob Leveridge, the Logging and Petrophysics speaker from Schlumberger, said: “I enjoyed the day and look forward to supporting next year.”

SPE London would like to thank OPC and Schlumberger for generously sponsoring the event and evening drinks. Please book early for next year’s event to avoid disappointment.

Aberdeen conference drives forward global unconventional gas debate

Energy industry leaders, politicians and technology developers gathered at Aberdeen Exhibition and Conference Centre (AECC) on November 27-28 to explore the successes and challenges of the unconventional gas industry.

With growing interest and scrutiny surrounding shale and coalbed methane developments, the 2012 Unconventional Gas Conference attracted an international audience of more than 275 delegates. The event featured an exhibition and series of presentations from leading experts covering the political arena, global operations, technology development, economic implications and public consultation.

Conference Chairman Tom Pickering said there had been a shift in public interest over the past year: “The conference, building on last year’s success, has moved the debate to cover wider issues and concerns, not only from within the industry but also from local communities. There is also a greater level of interest and involvement from around the globe, where exploration work is under way in many regions, and where the US in particular is reaping the benefits from an indigenous supply of natural gas.”

The event was organised by an industry-led committee with support from Aberdeen City Council, ITF and SPE Aberdeen. Delegates heard first-hand from major operators and service companies, including Dart Energy, Cuadrilla, Halliburton, Chevron and Weatherford. Other organisations providing a perspective included Coffey Environments, Urenco, AMEC, Simmons & Co International and Buccleuch Estates.

With significant concerns around the impact of shale gas, particularly on the environment, the need for transparency and management of risks has been a prominent theme of the Unconventional Gas Conference. Robert O’Keeffe, Associate Director of DNV, said that building trust and confidence through independent verification will be crucial to gaining public acceptance of unconventional gas. “By using a risk management framework to demonstrate the management of shale gas operations in a comprehensive, balanced and transparent way, operators will be able to earn the necessary Social licence to operate.”

Quentin Fisher, Professor of Petroleum Geoengineering at the University of Leeds, explained that academia had an integral role to play in making unconventional gas economically viable: “The development of improved reservoir characterisation techniques is key to allowing operators to construct effective development plans. Using our analysis and research, we can give approximate reservoir properties within a day, which could take a year using conventional core analysis techniques. This clearly has an impact on the rate at which unconventional gas can be developed.”

ITF, the global technology facilitator, urged more collaboration between oil and gas operators and technology developers. Technology Director Keith Mackie described a growing appetite among ITF members to advance in this field: “The UK energy industry boasts a long history of pioneering projects and innovators; however, commercialising technology in this market can be costly and time-consuming. Therefore, successes as well as failures must be shared to ensure that the bridge between political, economic and public concerns are addressed and rectified. The Unconventional Gas Conference is a huge step forward in that journey.”

Record-breaking introduction!
By Maya Hussain, SPE London Continuing Education Committee

A record-breaking 176 delegates attended SPE London’s 8th Annual Introduction to Exploration and Production Seminar (Geological Society, 22 November), the event’s increasing popularity reflecting the general growth in the Upstream sector.
A career in the oil and gas industry can open up a wealth of interesting and diverse employment opportunities. Within the UK vacancies exist onshore, offshore and overseas and the sector is working hard to ensure that it retains a skilled workforce to meet future requirements and challenges.

However, skills shortages have been identified across the board, which has resulted in many positions remaining unfilled. This has prompted companies within the industry to look at alternative recruitment techniques to attract new people in order to help meet the demand of current and future projects.

Whilst this is an issue for the oil and gas sector, it is good news for anyone with strong skills who may be looking to transfer their experience to a new sector. A wide range of opportunities exist, with job roles ranging from engineering, technical and drilling through to commercial and business support.

Are you ready for a change? Oil and gas companies from Aberdeen have come together to collectively tackle the skills shortages that are being faced by the industry. cushydoes, an Aberdeen based firm which specialises in human resources, recruitment and training, is organising a recruitment event in Newcastle which aims to attract trained people with transferable skills to positions in the north east (relocation to Aberdeen likely).

Director at cushydoes, Karen Reid, says, “The oil and gas industry needs a long-term solution to skills shortages. Currently the issue is tackled by encouraging new talent to enter the industry, and by moving skilled personnel from one firm to another. However, fewer graduates are now seeking oil and gas opportunities, and moving people around simply shifts the problem, short-term, from one company to another.”

cushydoes has long since recognised that direct action needed to be taken to manage the problem, and through this recruitment event, has been working with firms to find a solution such as attracting new entrants from sectors such as the armed forces. To support this, the firm has been working with the Careers Transition for the armed forces to ensure that members of the armed forces are aware of the event, and to encourage interested job seekers and movers to come along on the day.

“Opportunities exist onshore, offshore and overseas, but offshore work is not suited to everyone,” says Karen. “A typical working pattern would consist of 12 hours on and then 12 off continuously for two weeks, followed by a two week rest period. Depending on the work being undertaken, conditions can be harsh and also demanding.

“However, the lifestyle does appeal to many, offering a degree of flexibility, and there are excellent remuneration rewards. Some people, perhaps those leaving the armed forces, will be familiar with living away from home for long periods at a time and working in challenging circumstances.”

Thousands of job seekers and visitors are expected on the day. Those coming along will have the opportunity to meet with top name oil and gas operators, contractors and service companies.

OPITO, provider of skills solutions to assist the oil and gas extraction industry has also backed the event. Lorraine Boorman, Managing Director of OPITO, added: “With as many as 15,000 additional workers needed to boost skills provision in the short-term and thousands more jobs created in the years to come, a lot of activity is ongoing to attract people into the Oil & Gas industry. The competition for skilled employees has never been harder. This event is an excellent opportunity for people interested in a long and rewarding career in Oil & Gas to find out about the breadth of opportunities open to them.”

Karen Reid from cushydoes continues, “We want to promote the oil and gas sector as an attractive option for those with technical experience from other sectors. Candidates coming along on the day may be looking to move in a new direction, or may simply be interested in hearing what the oil and gas industry may have to offer them.”
In October, at the Douglas Hotel, SPE Aberdeen welcomed Mariano Florich, a Reservoir Geophysicist with Shell U.K. Ltd, who presented ‘4D seismic and reservoir engineering: best friends or annoying neighbours? – examples from the North Sea’.

Mariano engaged his audience by demonstrating the concept of 4D, or time-lapse, seismic using two boxes containing one-and-a-half crayons, which were circulated around the audience to see if anyone could guess which of the boxes held which size of crayon.

“Intuitively, we try to shake the box (ie send some vibrations to the earth) and listen (ie record the sound waves),” he explained. “We do this twice, once for each box (ie at different production times) and we use the difference in the sound to predict which one has the shortest crayon (ie look at the sound waves difference to assess changes in the reservoir).”

He confirmed that over the last 15 years, the process of building static/dynamic models and interpreting 4D seismic has gradually involved the integration of all subsurface disciplines. Geophysics, Geomechanics, Geology, Geostatistics, Geomatics, Reservoir Engineering, Petrophysics, Production Technology, Geochemistry and Well Engineering today work closely together to create the best representation of the subsurface within a static/dynamic model.

4D seismic enhances field development in a number of ways, he said. It reduces subsurface uncertainty on drainage patterns, connectivity, compartmentalisation and scenario choice, facilitating better HSE performance in terms of drilling safely into partially depleted reservoirs, blow-out monitoring, safe injection monitoring and safe disposal monitoring. An improved static and dynamic model provides better forecasts and better plans and leads to improved field performance through better producer and injector well positions, and the ability to control existing wells to increase rates, avoid water breakthrough and reduce water/gas production.

Mariano then introduced two case studies from Shell’s North Sea portfolio. ‘Gannet-F: big value from a small field’ described the results of 14 years of using 4D in the Gannet Cluster development and, in summary, explained that time-lapse seismic data has generated significant value and enabled further development at Gannet F both by optimising well placement to drain the main Forties accumulation and identifying unexpected fluid flow between unpenetrated reservoirs. It has also shown that inter-reservoir connectivity is dominated by sand-sand communication through fault juxtaposition. Finally, integration with static and dynamic models, conceptual geological models and other geophysical techniques has allowed further infill opportunities to be identified, specifically targeting the field’s southern reservoir units.

Turning to the Norwegian Draugen field, Mariano explained how ‘World-class 4D seismic data has identified new infill targets in a mature field’. This achievement has come about as a result of the integration of all information and the use of four monitor surveys, each of which has added information and value – the fourth being essential to attic drilling and the asset’s plan to drill some new wells later this year.

He concluded his talk by sharing the following key learnings:

• 4D time-lapse seismic has become a frequent tool for reservoir monitoring in the North Sea – mainly for Paleocene/Eocene deepwater turbidite reservoirs, but there are also some examples from Cretaceous (chalk) and Jurassic/Triassic reservoirs.

• 4D seismic should also become a frequent tool for asset optimisation, as it impacts the right HSE and business decisions at the right time.

• Integration of all available information is key. This is easy to say but not always easy to do! We need to start with a good understanding of the 3D static subsurface model, in terms of: structure (ie seismic interpretation, depth conversion, geological setting), facies and petrophysical properties (probabilistic seismic inversion for properties prediction), and volumes in place (are those volumes supported by material balance?).

• The challenge is to generate workflows that allow fast and efficient updates of static and dynamic models every time new data arrives (ie use of 4D seismic inversion to update history-matched dynamic model).

You can download Mariano’s full presentation from the Aberdeen Events section at: www.spe-uk.org.

This year’s SPE Aberdeen evening meeting programmes are kindly sponsored by Archer and Shell.

In November, Pete Naylor, BG Group Principal Consultant, Decision Risk Analysis, opened SPE London’s evening meeting at the Geological Society with ‘VOI: Value of Information (or Very Opaque Inferences)?’ which explained the when, why and how of VOI for those who need to decide whether it is worth investing time and money in acquiring additional data for field development.

Producing decision-relevant information is a key task for petroleum engineers and geoscientists, and some of the most important decisions are concerned with what type and quality of information to produce. As information gathering can involve very high-cost activities, such as seismic surveys, core and well test analyses and reservoir simulations, decision analysis can be a valuable tool in enabling us to distinguish between constructive and wasteful information gathering. Within that framework, VOI analysis helps us to evaluate the benefits of collecting additional information before committing resources.

Pete began by explaining that VOI analysis might be valuable when: facing a number of decisions; outcomes are uncertain; there is an opportunity to acquire additional information, and the information costs money or time. “If any one of these statements does not apply, then there is no point in undertaking a VOI analysis,” he said.

The reasons why additional information might be valuable include the possibility that the magnitude of future uncertainties will be reduced, and that decisions may change in the light of the new information. A simple
rule of thumb is that if the VOI analysis indicates no decision changes will occur, then do not waste money and time in acquiring new information!

The following key questions need to be addressed when undertaking a VOI analysis:

• How much does the information cost, in terms of both acquisition, analysis and delay to development?
• How reliable is the information? Will the measurement fail? Is there a possibility of false results (imperfect information)?
• How useful is the information: how significant is the parameter(s) to be measured and what difference will the information make?

Turning to how VOI works, Pete presented a detailed case study in which he demonstrated the use of an influence diagram – ‘a useful thinking tool to assemble the components of the problem’ – and a decision tree, in determining the answer to the questions ‘Should an appraisal well be drilled in the North Extension?’ and ‘Should the North Extension be developed?’ He explained that a new user of the VOI tool took less than two hours to learn the software and complete the analysis.

Franck Monmont, Principal Research Scientist at Schlumberger Gould Research Centre (SGR), followed with ‘In-situ combustion: a workflow from lab experiment to detailed numerical simulation’.

One of the most economically-attractive processes currently in use to recover heavy oil, in-situ combustion (ISC) is also one of the most physically complex techniques. Until now it has not been widely implemented due to a mixed case history of successful field development and perceived operational risks – a key factor in this lack of success being that the fundamental reaction mechanisms cannot be completely elucidated with today’s analytical tools. Also, empirical reaction models developed to date have failed to capture the governing reactions and measure their apparent rates appropriately, and there has been difficulty in evaluating the applicability of in-situ combustion from the available experimental data, especially when combined with existing reservoir modelling tools.

Franck presented work that SGR has developed to resolve these issues. He defined ISC as: “A recovery process in which air is injected in the reservoir where it reacts with the fuel. The heat generated is then used to recover the unburned crude. The fuel is not directly the crude oil in the reservoir, but is a carbon-rich residue resulting from thermal cracking and distillation of the ‘residual’ crude oil near the combustion front.”

To date, more than 45 commercial ISC projects have been implemented and more than 200 ISC pilot projects have been tested. Current ongoing projects/pilots include:

• Petrom/OMV Suplacu de Barcau Project, Romania (~8000 bbl/day) - heavy oil (2000-13000 cP), low reservoir pressure (7-10 bar)
• ONGC Santhal, Balol and Lanwa Projects, India (~15000 bbl/day) - medium oil (50-10000 cP), high reservoir pressure (~100 bar)
• Continental Resources North/South Dakota Projects, USA (~6000 bbl/day) - light oil, carbonate, high reservoir temperature & pressure.

Franck described the experimental workflow from oil sample to detailed reaction modelling. This includes phase behaviour characterisation of the oil, pseudo-reaction model characterisation, combustion tube (CT) experiments, and is outlined in the diagram below.

He then discussed the challenges involved in detailed reaction modelling of ISC. The aim of the exercise is to achieve: detailed simulation of multi-phase flow in porous media; detailed reaction model for heavy oil combustion; modelling of the ISC process at lab scale in 1D and 2D, and to extend to reservoir scale with adaptive meshing and upscaling. However, modelling ISC is difficult due to the multi-scales [length scale and time scale] problem, which necessitates a trade-off between spatial accuracy and temporal stability.

Franck presented two solutions developed by SGR:

1. **Develop an algorithm for the modelling of ISC that:**
   - Achieves a better balance between stability and accuracy
   - Resolves the combustion front
   - Decouples pressure equation
   - Splits advection, reaction, diffusion operators
   - Uses specialised methods for sub-systems.

2. **Adaptive mesh refinement (AMR) injection of hot (800K) methane gas into a cold (344K) methane-butane-nonane liquid reservoir.**

In summary, these solutions have enabled Franck and his colleagues to develop a front-capturing ISC simulator with detailed reaction modelling featuring high resolution numeric and adaptive mesh refinement for mixed parabolic/hyperbolic systems, which has performed a series of detailed combustion simulations which provide a better understanding of the stability of the front.

There are, however, outstanding issues, and Franck concluded by outlining some of the ‘missing pieces of the puzzle’. He explained that: as yet, there is no experimental model for very high pressure combustion; the workflow has been tested on one oil only, therefore more experimental data is required, and there is no ‘systematic’ path from detailed reaction experiments to reservoir scale computations. There is also a challenge to generate flame front correlations with the detailed simulator reservoir simulator. These are elements that he and his colleagues will be focusing on going forward.

You can download both SPE London November presentations from the London Events section at: www.spe-uk.org.

The meeting was kindly sponsored by Schlumberger.
**YP London**

A visit to Weatherford’s Winfrith Lab
By Nurzhan Kairbayev, Fugro Robertson Ltd

Continuing its tradition of organising interesting trips to different laboratory facilities, SPE YP London Committee organised a visit to the Weatherford Advanced Core Analysis Lab, Winfrith, Dorset, in early December.

On arrival at the Lab, the group of 12 young engineers was greeted by Office Administrator Lynn Palmer, Lab Manager Andrew Cable, and Head of Petrophysics David Lee. Andrew and David gave a brief introduction to Weatherford and Winfrith Laboratory and this was followed by a presentation by Andrew on sample handling and conventional analysis. He explained that at the beginning of any core analysis the emphasis is on the importance of screening the samples and identifying the most reliable ones. Participants also learned that all the core samples received by the Lab are first scanned by MRI machine at a local hospital, to identify fractures and intrusions in the rock. His presentation also covered areas such as the Primary Drainage Process, Wettability Restoration, Water-Oil Relative Permeability and History Matching of Laboratory Data by Simulation.

David’s presentation gave us the opportunity to learn more about the Centrifuge Services offered by the Lab. He explained how measurements of relative permeability, capillary pressure, residual saturations and endpoint parameters were carried out using single- and multi-speed centrifuges.

After lunch, the attendees were divided into two groups and given a tour of the Lab. Equipment used there is state-of-the-art, for example reservoir condition high-pressure-high-temperature (HPHT) experiments are carried out on special ‘reservoir condition rigs’ (pictured) that can simulate the subsurface conditions.

At the end of the trip David and Andrew thanked everyone for coming and said they would be happy to see more SPE members visiting the Lab.

The event participants and SPE YP London Committee would once again like to thank Weatherford Labs UK and the staff of the Winfrith Lab for facilitating this interesting and informative trip!

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**YP Aberdeen**

Illicit festivities!

SPE YP Aberdeen held their traditional Christmas dinner at the city’s characterful Illicit Still bar and food venue. They were joined by other Section colleagues, including members of the Aberdeen and Robert Gordon Universities’ Student Chapters. The atmosphere was festive and the food copious!

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Aberdeen students benefit from EOR experience

In early December, the University of Aberdeen SPE Student Chapter organised a Technical Talk on Enhanced Oil Recovery.

Delivered by Khaled Elkhandori, of Schlumberger, the presentation included discussions on EOR management philosophy, Micro Pilot, Digital Rock and Deep Look measurements. The event once again demonstrated the students’ success in actively engaging industry partners, as well as the industry’s interest in sharing real-life experiential learning with the students.

The YPs wish all fellow SPE members a very happy 2013 and look forward to the input and collaboration of YP Aberdeen members in presenting new and exciting activities for the year ahead.
Centrica is investing in the UK

Centrica’s upstream business explores, develops and produces oil and gas in the UK, Norway, Netherlands, Trinidad and North America. Production has doubled since 2008 and is set to increase by 50% to over 200,000 bopd in the next two to three years. Current reserves are around 440 million boe. We need experienced, pioneering and driven professionals to develop new ideas and deliver these opportunities.

Our East Irish Sea (EIS) business unit operates over fifty wells, ten platforms and seven producing fields including the giant South Morecambe and North Morecambe gas fields. Recent drilling successes and advances in geoscience techniques and thinking have led to us building a new portfolio of opportunities in the EIS and adjoining basins. The discovery of the Rhyl field in December 2009 was a product of this initiative and we are now capitalising on this with further appraisal and exploration of the area. There is a four well drilling programme ongoing and we are also acquiring an Ocean Bottom Cable seismic survey, the first one ever within Centrica. We have plans to develop four satellite gas discoveries and there is also a high profile Carbon Capture and Storage project underway.

To support this growth we are recruiting a Principal Production Engineer. You will provide expert Production Technology/Petroleum Engineering guidance for managing the existing producing well stock and new developments. This is a high visibility, hands-on, technical role with the chance to make a significant impact on production. You are likely to become a key player (“the go to person”) within EIS and across the wider group for this type of role.

We offer a highly attractive compensation package and flexible working practices. You will be working with the large subsurface community at Centrica’s headquarters in Windsor as well as the Base Production & Operations Management teams in Morecambe Bay. The Windsor offices offer a gym, a subsidised restaurant, access to the River Thames and other amenities. The Morecambe Bay offices are close to the Lake District with stunning views out over the East Irish Sea and beautiful countryside. There is flexibility on your exact working pattern and home location but to ensure success you must establish a presence at both locations. Relocation assistance is available where appropriate.

For a confidential discussion about this position please call Brian Taylor at our retained consultants Simpson Crowden LLP on +44 (0)207 016 9768 or +44 (0)7711 392829. To apply, please email your CV to centrica@simpsoncrowden.com

CVs sent directly to Centrica will not be considered.
SPE London 2nd Annual Conference & Exhibition
22-23 May, Savoy Place, London

Following a successful inaugural event last June, SPE London’s 2nd Annual Conference & Exhibition will focus on ‘Managing oil and gas portfolios in uncertain markets’, and will feature a lineup of leading keynote speakers, including: Didier Holleaux, CEO, GDF Suez E&P; Mike Watts, Deputy Chief Executive, Cairn Energy; Nick Davis, Partner, Memery Crystal; Neil Gilmour, General Manager, Floating LNG Shell; Nick Cooper, CEO, Ophir Energy, and Martin Copeland, MD, Evercore.

The high-profile event is designed specifically for senior oil and gas industry and City professionals working in sectors such as corporate finance, asset acquisitions and divestitures, corporate mergers and acquisitions, investment analysis, equity research, portfolio management, business development, and the valuation of oil and gas assets.

London is at the heart of the global financial sector and its prime location and investor profile attracts international oil and gas companies seeking to raise capital through London markets to fund North Sea and global opportunities and portfolios. After the overwhelming success of last year’s inaugural conference, this year’s event will include topics and themes carefully selected to be of interest to the unique mix of technical and financial professionals active in the oil and gas sector. Leading oil and gas companies and consultancies will present case studies on portfolio management, while industry experts will also share key insights and best practices on a wide range of stimulating topics, including: principles of oil and gas taxation; incentivising marginal projects; challenges and opportunities for investors and operators in Africa; global portfolio management, and M&A market trends. An evening networking reception and exhibition will conclude the session on day one, and day two will round off with a grand Gala Dinner at Claridge’s Ballroom, with Jeremy Vine as a guest speaker.

For more information on the event, to register as a delegate, or if you are interested in being a speaker or sponsor, please visit: www.spelondonconference.com

IMPERIAL COLLEGE

London

Using Special Core Analysis in Reservoir Engineering

Wettability, Relative Permeability & Residual Oil Saturation
20 – 22 March 2013

Presented by Jess Stiles, this course is designed for reservoir engineers and geologist involved in modelling petroleum reservoirs, and to geoscientists working in the area of reservoir characterisation. In this unique course the causes of discrepancies in laboratory results are revealed and the importance of reservoir wettability, defining water-oil relative permeability, is explained.

Laboratory personnel involved with SCAL measurements will find the course useful in learning how their results are used and in gaining insight into how laboratory programmes might be improved. Production geologists and petrophysicists working in integrated teams will also find the course valuable, particularly in selecting samples for analysis and assisting in relating relative permeability and capillary pressure to rock type.

www.imperial.ac.uk/cpd/core

Regional Focus Seminar change of date

SPE London’s Regional Focus – Post Conflict: industry considerations in areas of high risk’ one-day seminar, previously advertised for 14 March, will now take place on 25 April, at the Geological Society, Piccadilly. Prices and contact details as above.

For further details contact:
Ying Yuan, Centre for Continuing Professional Development, School of Professional Development.
E-mail: cpd@imperial.ac.uk Tel: +44 (0)20 7594 6881

www.imperial.ac.uk/cpd

STILL TIME TO BOOK!

SPE London Technical Seminar – ‘Redeveloping the North Sea’

13 February, Geological Society, Piccadilly

With ageing facilities and challenging operating environments under a tightened safety and fiscal framework, what are the opportunities to increase recovery in the North Sea? What about new prospects to be developed through existing hubs? Let’s hear from the experts about opportunities that exist in one of the world’s most developed oil and gas provinces.

• James Eddy, McKinsey: ‘Future prospects for the North Sea’
• Jorg Herwanger, Schlumberger: ‘Integrating time-lapse seismic methods, reservoir simulation and geomechanics for reservoir management and field development planning: a North Sea case study’
• Jeff Parke, Schiehallion, BP: ‘Schiehallion field’
• Eugene Babinski, RPS Energy: ‘Redevelopment of UKCS fields using EOR techniques’
• lain Hutchinson, Merlin ERD Ltd: ‘Redeveloping the North Sea with Extended Reach Drilling technologies’
• Sacha Sarshar, Caltec, a Petrofac company: ‘Enhancing production using SJP’s (Surface Jet Pumps) and compact cyclonic separation’
• John McKenzie, Asset Development and Improvement Ltd: ‘Subsea wells’
• Philip Whittaker, The Boston Consulting Group: ‘Tailoring organisation & mindset to the specific challenges of mature areas’

Tickets: £220 member; £250 non-member; £35 student.
Please email: katespe@aol.com

Programme for Professional Development

Imperial College

London

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www.imperial.ac.uk/cpd
Head of Technical Support designate

KAPPA is the leader in the provision of Dynamic Data Analysis software, training and consulting services. Privately owned and growing rapidly, KAPPA is a high tech provider in the E&P sector. With clients on all continents ranging from the super-majors and NOCs through to smaller operators and service companies, it punches well above its weight.

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Ultimately leading a small, bright and enthusiastic support team both in the UK and around the world, the candidate will possess:

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- A strong practical knowledge of Dynamic Data Analysis, in particular pressure and rate transient analysis and simulation.
- Very good written and spoken English
- Good communication and presentation skills
- Prior experience with an Operating Company or a Service Company
- A working knowledge of KAPPA software
- An International outlook and willingness to travel.

Based in Reigate, we are looking for someone who will proactively drive the field technical function, inspire our people and our clients and keep learning. If you feel this could be for you send your CV in strictest confidence to jobs@kappaeng.com
SPE Another Perspective Seminar 6 March, Aberdeen Exhibition & Conference Centre AB23 8BL

Chair Maria Trujillo. “The Seminar is aimed at women and men at any stage of their career, who are interested in climbing the ladder to success. Don’t miss this chance to learn how to gain or improve your leadership skills!”

For details, see back page and visit: www.spe-uk.org

Book at: www.rodgerandco.com
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uncommon opportunities
The leadership journey: Unleashing the potential of your career

Wednesday 6th March 2013
AECC Claymore Drive, Bridge of Don, Aberdeen AB23 8BL
£50.00 plus VAT per person

A panel of high-achieving leaders will be interviewed by STV presenter Andrea Brymer in the opening session. Then, experts from academia and industry will provide a thorough insight into the challenges of leadership.

Our expert-led mini workshops, using the World Café model, will provide room for discussion and debates centered upon the psychology and transformation process of becoming a leader.

The workshops will:
- Set the context
- Explore questions that matter
- Encourage everyone’s contribution
- Cross-pollinate and connect diverse perspectives
- Listen together for patterns, insights and deeper questions
- Harvest and share collective discoveries
- Useful findings of each workshop will be made available as post-seminar material to all participants

The seminar is open to everyone at any career stage, no matter the industry: energy, oil and gas or another sector. It is a great opportunity to learn, for the first time in SPE Aberdeen’s history, from the shared insights of people enjoying successful careers and how to ensure, that no matter the geographical or cultural setting, you will always be a leader.