

SPE review

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

issue 251 | June 2011



Society of Petroleum Engineers

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POINTING THE WAY!

A record attendance of more than 475 cross-discipline industry professionals, academics and students, and a busy sellout exhibition, created a lively buzz at **DEVEX 2011**, in May. See report on page 3.

GOING THAT EXTRA MILE... TO THAILAND!

SPE Student Chapter
2010-2011
Imperial College, London

by Kumar Gaurav, President, SPE Student Chapter, Imperial College London

One of the most important events in the ICL Student Chapter calendar is the annual overseas field trip, which gives MSc Petroleum Engineering students the chance to have more direct interaction with the oil and gas industry.

This year's field trip, to Thailand, was a great experience for all involved, as the students had the opportunity to see and hear about the different aspects of oil and gas business in the country. The party was welcomed to the operations centres of PTTEP, BG Group and Schlumberger, where the students took part in interactive sessions with industry experts. This enabled them to better

understand the roles and responsibilities of these professionals and to see first-hand how the industry works.

The trip was kindly supported by SPE London and major oil and gas companies operating in the UK, including BG Group, BP, Schlumberger, Total and Hess, and we are grateful to our sponsors for this opportunity.

Our memorable visit to Thailand was a major highlight of this year's busy Student Chapter programme, which has included a variety of technical sessions, guest speaker events and social and teambuilding activities.

More student news on page 8



SPE review

The Society of Petroleum Engineers (SPE), a not-for-profit professional association of 90,000+ members from more than 100 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 4,500 UK SPE members, and quarterly to an additional 6,000+ 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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TECHNICAL MEETING

Edinburgh

Ian Phillips, of CO₂DeepStore Limited, will present *'The challenge of carbon capture and storage in the North Sea'* at the SPE in Edinburgh evening meeting, on **15 June**, at the University of Edinburgh's David Hume Tower.

This very topical presentation will:

- Provide a review of the various technologies appropriate to capturing CO₂ from hydrocarbon combustion – at power stations, cement works, steel and aluminium smelters, and similar large energy consumption sites
- Discuss the compression and transportation requirements – both for pipelines and for shipping of CO₂
- Outline some of the technical challenges associated with handling CO₂
- Review the range of potential reservoirs suitable for CO₂ storage – both depleted hydrocarbon reservoirs and the larger, but more challenging, potential of deep saline aquifers in the North Sea
- Describe some of the unusual health, safety and environmental issues
- Outline the current state of the emerging market for CCS.

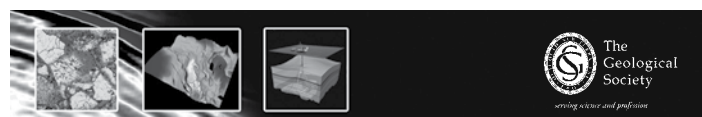
VENUE: University of Edinburgh Faculty Room South, David Hume Tower, George Square, Edinburgh, EH8 9JX

TIME: 6pm for 6.30pm to 8.30pm

COST: SPE/EI members £20; non-members £25; students £5.00 (if booked in advance through University Chapter Chair)

BOOKING: online at: www.rodgerandco.com, or call: **01224 495051**

Late bookings: booking within 24 hours or on the door – £5 supplement (cash or cheque only); students, through Chapters only, £5 (**no student rate at door**).



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Convenors:
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International conference to mark 30 years of the Petroleum Group

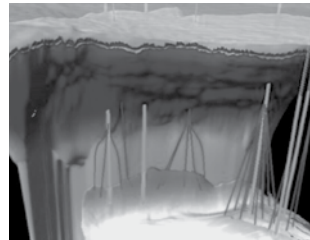
Major Discoveries of the 21st Century

Standing on the shoulders of giants...

25-28 September, 2011

Bath, England

REGISTRATION NOW OPEN



For 30 years the Petroleum Group has tracked the development of petroleum geosciences in exploration and exploitation. To mark this milestone, 'Major Discoveries of the 21st Century' will focus on the highest profile petroleum discoveries and new plays of the last 10 years. Through invited talks and panel discussions the conference will examine the

insights gained and ask the questions "where and what next"?

In returning to the historic Pump Rooms in Bath, England this conference will be a prestigious celebration of 30 years of the Petroleum Group's role at the forefront of petroleum geoscience.

Keynote speakers: Mike Daly (BP), Bruce Levell (Shell) and Malcolm Brown (BG)

- Discoveries in Angola, Gulf of Mexico, Venezuela, Malaysia, Ghana, Uganda, West Siberia, India, UK, Brazil and others
- Talks from Tullow, ExxonMobil, Kosmos, Nexen, Chesapeake, TNK, BHP, Chevron, Cairn, Total, USGS, Petrobras and others

This conference promises to be a prestigious celebration of 30 years of the Petroleum Group's role at the forefront of petroleum geoscience.

For further information and registration, please contact: Steve Whalley, Event Co-ordinator: +44 (0)20 7432 0980 or email: steve.whalley@geolsoc.org.uk

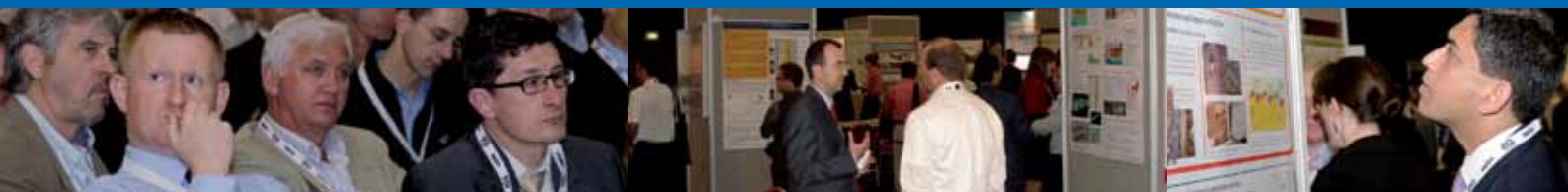


At the forefront of petroleum geoscience

www.geolsoc.org.uk/petroleum

DEVEX 2011 points the way for mature basin development

(from page one)



Held at Aberdeen Exhibition and Conference Centre, on 11-12 May, the 8th annual DEVEX conference and exhibition, jointly organised by SPE Aberdeen, PESGB (Petroleum Engineering Society of Great Britain) and AFES (Aberdeen Formation Evaluation Society), once again demonstrated the event's value as the premier European forum for innovation and cross-industry collaboration in oil and gas development and exploration.

Focusing on the theme 'Sharing Solutions for Mature Basin Development', this year's conference featured 44 presentations that balanced in-field case histories with technological challenges and more specialised studies, as operators, suppliers and academics presented new learnings of benefit to the global oil and gas arena. Among the diverse range of technical topics discussed were drilling optimisation, enhanced oil recovery, integrated reservoir modelling, geophysical advances, managing well integrity, integrated operations implementation, and power production from waste produced water.

The conference sessions were launched by keynote speakers Rob Kuyper, Development Manager, TAQA Bratani, and Martin Rune Pedersen, Managing Director, Maersk Oil UK, who outlined some of the business and technical challenges facing North Sea development, and discussed investment decisions and innovative solutions adopted by their respective companies.



Rob Kuyper



Martin Rune Pedersen

The conference was accompanied by 20 technical poster presentations, which shared new findings from focused studies on a wide spread of subjects, from enhanced reservoir formation analysis to optimised drilling methods and technologies.

Some of the very latest technology solutions were showcased at the busy exhibition, which gave vendors and visitors plenty of opportunity to exchange ideas and information, make new contacts and catch up with colleagues from across the industry.



Paul Adair, DEVEX 2011 Chair and SPE Board member (left), said he was greatly encouraged by the record turnout, the high level of sponsorship and the enthusiastic response from everyone he spoke to. "It was a very energetic and upbeat event, with particularly strong oral and poster presentations. There was a lot of focus on the opportunities out there and the investment that's being made, and while there are clearly many technical and business challenges ahead, there was a very positive

message coming through about how our mature North Sea assets can be, and are being, optimised to deliver a buoyant future for the industry."

Development workshops

Two practical workshops were held in association with the main DEVEX 2011 event.

The pre-conference **Core Workshop**, on 10 May, provided a valuable opportunity to view wellbore cores from three different areas of the North Sea (Northern, Mid North Sea and West of Shetland). During the event, specialists guided the attendees through the specific features of the selected reservoir rock samples.

The **Young Professionals Workshop**, 'Drilling through the divide: how does leadership apply to technical disciplines?', on 12 May, was well attended by around 60 YPs from the three organising societies, who were tasked with solving challenging problems designed by a panel of industry leaders, who then commented on their solutions and helped them understand some of the key attitudes of leadership required to enhance their career development.

Participants' perspective

"It's been very interesting to meet some of the new, smaller consultancy companies and I'm delighted to see so many students here, as this kind of event gives them an important insight into the industry. I presented a paper and have attended most of the sessions on development planning and reservoir engineering. It's encouraging to see the operators focusing so much now on their large, mature assets to see how they can optimise oil and gas recovery. Some of the technologies discussed have already been applied in other areas, but they are new to the North Sea and its challenging environment."

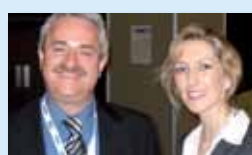
Mohamed Nagib, Petroleum Engineering Lecturer, University of Salford

"While it's hard for undergraduate students to understand some of the presentations, a very useful aspect of this event is that you can visit the exhibition and the exhibitors are very happy to answer our questions and explain things in more depth."

"It's a great event and we are grateful to SPE Aberdeen for giving us the opportunity to participate as volunteers. We are finding out a lot of useful information. When we see some of the applications of what we are studying, it gives us a better understanding. For example, at one of the stands there was information about an in-field application of the venturi meter. We studied the principles of the meter a month ago in the laboratory, and so it was very interesting to see this real-life application of the technology." **Dmitriy Klinchev and Sultan Djabbarov, Petroleum Engineering Students, University of Aberdeen SPE Student Chapter**



"We've been coming to DEVEX since it was launched. It's important for us to have a preview of exploration activity in the North Sea sector and to touch base with our clients. It has been a very good event this year, and I'm pleased that there has been such a strong operator presence. We are promoting the quality and control advantages of using integrated services, from coring to storage, including analysis. This service has attracted quite a lot of interest, because dealing with several contractors in this field of activity can lose operators valuable time." **JV Garcia, Kirk Petrophysics, a Reservoir Group (RG Data) company**



"We've had a good mix of challenging questions from existing and prospective clients and also from students, about our new 3D geology modelling and artificial lift technologies. The whole event has a very positive and relaxed atmosphere. What's particularly interesting about this year's conference is that there is more academic input. That's a very good thing. It's easy to become obsessed with achieving results quickly, but it's also important to go through the academic thinking process beforehand." **Sarita McVicar-Wright and Calum Trail, Schlumberger**

SPE London looks at shale gas in Europe – will it take off and at what cost?

In April, SPE London held a well-attended Shale Gas Seminar at the Geological Society, Piccadilly. The Section's Continuing Education Chair, **Clara Altobelli**, summarises the discussion.

Arguably, shale gas has been a surprise saviour for the American domestic gas market. **Chris Burns (Baker RDS)** explained that shale gas production has exceeded the 2005 forecast by four times, with around 3 trillion cubic feet per year more in 2010 than was previously forecast. Shale gas reservoirs are deep marine deposits with permeabilities in the nano-darcy range and so no trap is required. Shales are globally extensive, but development has been largely limited to the US.

Philip Clarke (Novus Consulting) described the criteria for identifying potential shale gas reservoir candidates for development. If wells are too deep, the costs are too high to make it work financially; conversely, if they are too shallow, there are concerns about aquifer water contamination and so depth is a very important consideration when investing in a shale gas development.

Not all shales are the same and **Ian Hutchinson (Sasol)** gave more criteria for selecting a good shale gas reservoir development candidate. The gas is normally almost pure methane with no impurities (H_2S or CO_2) and there is no formation water production (only water that has been pumped as part of the fracture campaign). This means there is no gas/water contact in a shale gas reservoir.

Ewan Whyte (Halliburton) demonstrated shale gas field planning, where the aim is to optimise well spacing, direction of horizontal section, horizontal length and fracture placement. Additionally, surface implications need to be considered, such as lakes, towns, roads, hills, etc, to optimise drilling pad placements.

Eduardo Martinez (Schlumberger) explained the operational process of shale gas development. Stimulation technology has been key to the success of US shale gas. Fracture treatments can be optimised by using logs to target areas likely to have large fracture growth and so maximise effective fracture surface area.



Left to right: Chris Burns, Ian Hutchinson, Walter Heinz, Clara Altobelli, Ewan Whyte and Eduardo Martinez.

Shale gas development being an emotive topic in Europe, managing the environmental impact is one of the most important considerations when adapting US success here. **John Demanti (URS Corp)** highlighted the differences between the regions, stating that "success will come from adaptation to Europe's unique circumstances, not from mere replication". Significant environmental concerns are water management, radium, well blow-outs, chemical spills, gas migration, visual impacts and environmental footprint. Solutions include improved design of water reservoirs, recycling production water, groundwater modelling tools and water treatment technology.

Dr Walter Heinz (ERM) focused on the human factor of shale gas development. Stakeholder concerns are high and have a huge impact on the timing and costs of development, as well as on company reputations. Walter advised that it is important to know your stakeholders and address their concerns by engagement early on in the process.

The seminar closed with **Ramin Lakani (Baker RDS)** addressing the financial implications of shale gas development in Europe and concluding that unconventional gas has the advantage of lower exploration risk and that its role will increase as gas demands increase.

As technology advances and companies begin to share risks and costs, there could be a future for shale gas in Europe. However, some wells need to be fraced in Europe to see if there are proven commercial rates. Whether the 'shale gas revolution' experienced by the US is repeated in Europe, remains to be seen.

SPE London wishes to thank Schlumberger and ERM for their generous support in sponsoring this seminar.



The Algarve,
Portugal

25–30 September

Unlocking the Potential
of Nanotechnology
for Exploration &
Production

2–7 October

Shale Gas: Beyond
Current Technologies
and Going Global

9–14 October

CO_2 Geological Storage:
Will we be ready
in time?

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Society of Petroleum Engineers

ADVANCED TECHNOLOGY LEADS TO WORLD RECORD WIRELINE RUN RECORD BREAKING RESULTS

Natural gas has gained widespread credibility as a relatively low-carbon fuel source, with the International Energy Agency (IEA) estimating that, worldwide, there are now enough technically recoverable gas reserves for at least 250 years at current production-consumption rates.

Oil and gas exploration companies are increasingly looking to capitalise on this in a bid to replace declining production from conventional reserves, making the determination of accurate gas volumes, content and deliverability critical considerations when attempting to assess the economics of an unconventional gas play.

Quest Coring saw an opportunity in the market; not only to deliver longer cores but also those of a larger diameter (enabling better analytical studies of the core), through the development of the Quick Core™ technology.

The tool is designed to bridge the gap between 90-ft conventional coring and 30-ft wireline coring tools - while still utilising a wireline to retrieve the samples. The wireline retrievable coring system ensures that continuous cores can be cut and retrieved without tripping the drill string, while the two-piece bit technology means the Quick Core™ can core and drill without tripping. This permits multiple zones of interest to be cored, enabling favourable time and therefore cost savings.

High torque connections on a CSX 54 pipe enables the system to go to extreme depths while also allowing core barrels to be made up to longer lengths. The Quick Core™ also has an anti-milling feature – if a jam occurs while coring, the system automatically alerts the coring technician on the surface so that valuable core data is not milled away.

The safety benefits are key to the technology's success; the majority of injuries on a rig are from tripping drill pipe and because the Quick Core™ tool reduces both the number of wireline trips and drill string trips required, it greatly minimises the potential for injury too.

The Quick Core™ recently facilitated the successful completion of the first ever 125-ft wireline run in a shale gas reservoir for a major US operator, amounting to a 35 per cent increase in the amount of core cut previously over the same recovery time. This not only demonstrates the efficient and cost effective methods provided by the Quick Core™ in recovering the largest core available via wireline, but also further sets it apart from its competitors as an industry leader in technology and coring advancements.

The improvements in coring depth and diameter that Quest Coring is realising provides operators with solutions that work for them to improve the efficiency and quality of their exploration while leading to better returns on capital spending – the ultimate metric.

“ World’s first successful completion of 125-ft wireline run in a shale gas reservoir..!”



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March Technical Presentations **London**

Self-belief will unlock exciting opportunities for global gas industry

**LONDON,
ABERDEEN**

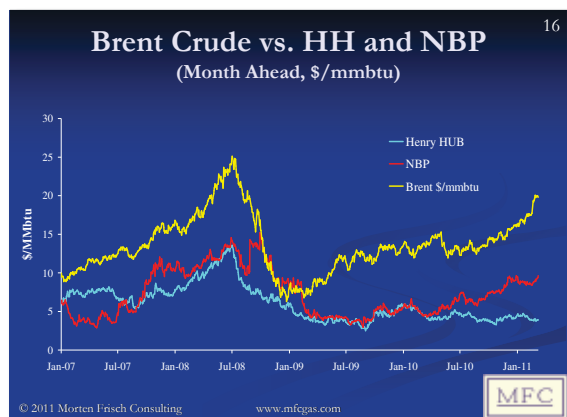
'Unconventional Gas: Consequences and Opportunities' was the title of an insightful presentation by expert gas strategist and negotiator **Morten Frisch, of Morten Frisch Consulting (MFC)**, at the SPE London evening meeting, in March.

With 35 years of hands-on global experience informing his discussion, and having monitored and analysed unconventional gas developments since 1999, Morten had a wealth of interesting information to share with his large and diverse industry audience.

The presentation focused on the all-important question: now that unconventional gas – coal bed methane (CBM), tight gas and shale gas – has become an energy game-changer in North America, what energy market opportunities does this new-found abundance of gas represent in an era with rapidly-increasing crude oil prices and increasing political uncertainties in key crude producing regions?

Beginning with an overview of the global gas industry, Morten summarised the different forms of unconventional gas and where they fit within the context of a changing gas environment. He said that by 2009 – a year of substantial market changes – the US and Canada had achieved near-self-sufficiency due to unconventional gas production (particularly late, shale gas) and that the circumstances, other than price, that will drive a similar gas revolution outside North America are the location of resources relative to markets, energy security of supply considerations, employment needs, balance of payment and environmental factors.

Discussing energy price dynamics, he explained that despite a decline in production, the Brent Crude blend has become the most important international energy benchmark (the WTI inland US crude blend is unable to compete until such time as it is exported), and that the current price differential between Brent crude and Henry HUB (four times higher) and NBP (twice as high) is creating major market forces in North America.



Some notable points he made with regard to North American unconventional gas include:

- shale gas development is in its infancy
- liquids-rich shale gas deposits are becoming increasingly important in setting the North American gas price
- coal-fired power generation remains important due to long-term take-or-pay coal supply agreements
- the majority of gas plays are economic at US \$3.5-6.5/mcfe
- gas production levels are likely to remain high, even in a low price environment
- US gas demand in the short-to-medium term remains relatively constant.

The subsequent discussion of gas markets in other global regions was equally enlightening. Until recently European Hub prices were predicted to remain some 20% below the oil-indexed price levels in the short term due to the current high oil prices, but signs are that European gas prices would increase again already this spring due to increased LNG demand from Japan and now rapidly increasing economic activity particularly in

Germany. Shale gas is unlikely to have a major impact on European gas supply before 2020, while CBM and tight gas exploration activities in the region are likely to expand with increasing gas prices. In Africa, substantial gas production from existing well-established developments is set to be further boosted by new developments in Angola, Ghana and East Africa, while the Asian gas markets are distinguished by a surge in LNG demand and the region's substantial potential for exploration and production of CBM (already well established), and tight and shale gas.

In the final part of the talk, Morten presented a compelling business case for the development of new global gas markets. Location, relative availability and economics of hydrocarbon reserves have long influenced the crude oil/gas price differential. However, with the advent of economic unconventional gas production technology, gas reserves have substantially increased and are now closer to consumer markets. As increasing gas reserves are identified outside traditional oil and gas producing regions, their exploitation can be free from external political and socioeconomic considerations. Add to this a combination of technical, cost and/or funding challenges with nuclear and sustainable energy solutions, and it can be concluded that the developing energy environment presents an excellent opportunity for the gas industry to successfully prove the need for more gas and to develop additional gas applications. Based on demand, these future markets are likely to include power generation, district cooling, automotive and marine fuels, and transportation fuels (including jet fuel) developed through Gas to Liquids (GTL) projects.

Rounding off with a challenge he hoped would resonate particularly with the latest generation of oil and gas professionals in the audience, Morten said: "Traditionally a financially conservative sector, the gas industry needs to re-invent itself by thinking and acting 'outside the box'. It needs to 'sell' the use of natural gas – a wonderful fuel – not only to itself, but to the world at large."

African Ventures

Following a busy networking buffet, kindly sponsored by Aurelian Gas plc and Tower Resources plc, two colourful presentations outlined the challenges and rewards of frontier oil and gas exploration and production in Africa.

First, **Peter Kingston, Chairman of Tower Resources plc** and a founder director of Enterprise Oil, shared his company's exhilarating – and often emotional – entrepreneurial experiences in 'Minnows Chasing Whales', which gave an intriguing insight into the structure, vision, strategy and operations of the compact, low-cost organisation in its pursuit of highly significant prizes in the frontier areas of Namibia and Uganda. These represent three offshore blocks (23,000km²) and one onshore block (6,000 km²), respectively. The portfolio was assembled in late 2005 by Neptune Petroleum, whose founders, with a proven track record spanning decades of oil and gas experience, remain on the Board of Tower Resources today.

First, Peter described the regional settings of the prospects. For Block 5, in Uganda, for example, he indicated that: it is part of the Albertine Rift system; there is prolific oil production in Sudan to the north; onshore frontier exploration in Africa is very expensive; there was first oil discovery in Block 2 to the south in early 2006; Uganda reserves in 2011 are approaching 1 billion bbls, and there is much regional development under way. Within that context, his company's drilling targets, Iti and Sambia, had a reserves potential of 100 million barrels each (400 million barrels maximum combined). Two dry holes later there is still potential for 100 million barrel discoveries.

He then gave a detailed analysis of the exploration settings in each of the countries, discussing the complex geophysical interpretations and the particular challenges they have revealed. A key feature of Peter's talk was his in-depth description of how, for a 'minnow'-size company such as Tower Resources, in the case of the Uganda targets, an extensive field



can still become a realistic prospect and the first well in Namibia will test a prospect with multi-billion barrel resource potential

Table 1 summarises the company's progress and ambitions to date.

Table 1

Tower Market Capitalisation

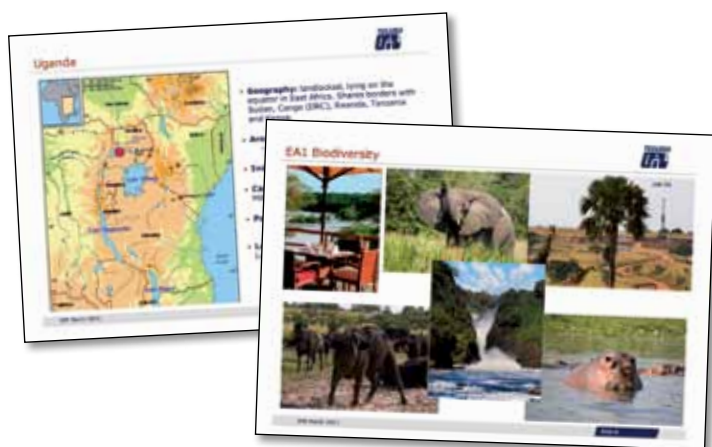
2006: £8 million Uganda success: CA £250 million
Current: £90 million Namibia success: £1-2 billion

Resource Potential

Uganda 1st well: 400m bbls gross; 300m bbls net – dry hole
Uganda 2nd well: 100m bbls gross; 75m bbls net – dry hole
Uganda 3rd well: 100m bbls gross; 75m bbls net – October 2011
Namibia 1st well: 5 billion bbls gross; 750m bbls net – end 2011
Namibia other prospects: 4 billion bbls gross; 600m bbls Net

Robin Rindfuss, of Tullow Oil, continued the African exploration theme with 'Uganda – exploration, appraisal and development planning – getting ready for first oil'.

Robin – a Petroleum Engineer by background, with a keen interest in Petrophysics and more than 20 years of technical and leadership experience of E&P projects in Africa – set the scene with a fascinating snapshot of the geographical, socioeconomic and ecological profile of the country once famously described by Winston Churchill as "the Pearl of Africa".



He then discussed the background and status of the Uganda Project, with which Tullow has been involved since 2004. Tullow has interests

across three exploration areas, EA1, 2 and 3A, where successful discoveries were delivered in the Kaiso-Tonya area of EA2 and the Kingfisher area of EA3, in 2006.

Since then, Tullow has carried out extensive 3D data acquisition, drilling and testing operations in the Southern Basin, both onshore and offshore, and expanded its focal areas using 2D and 3D to identify new plays in the Northern Basin and offshore, delivering numerous discoveries in this area. The company has focused on reviewing and applying enabling technology (see Table 2) as well as on optimising operations, and carried out appraisal planning and delivery together with detailed development scenario reviews. In doing so, it is realising its vision 'to unlock the full potential of a new frontier basin'.

Robin reminded the audience that all these activities are ongoing within the context of extreme environmental sensitivity and he added that he, personally, has a strong interest in conserving the wonderful biodiversity of the region and that this lifelong commitment is shared by his colleagues and his company.

Table 2 – Technology enablers for Tullow Uganda Project expansion:

- **Geophysics & Geology:** including early use of 3D modelling; full-tensor gravity gradiometry, and fit-for-purpose 2-D and 3-D seismic acquisition and processing to unlock exploration potential and deliver fit for purpose appraisal programs.
- **Testing Operations:** including acquisition of dynamic data; adjustments to test equipment used to address fluids challenges; adjustments to flaring technology; adjustments to suspension methodology to allow for rigless testing on some wells, and longer flow periods (up to 50 hours) during well testing in a safe and environmentally sound manner.
- **Logging & Petrophysics:** including adjustments made to acquisition programs, while keeping standard logging suites to enable consistent comparisons across wells and fields; workflow improvements, and use of core data to calibrate petrophysical results and enhance reservoir evaluation. Improvements in core acquisition methodology and handling.
- **Water Data:** including adjusting sampling methodology to provide uncontaminated baseline formation water samples, and early core acquisition allowing for full evaluation of a water flooding project. This early information has enabled enhanced development screening from reservoir through to production/injection facility design.

You can download the full presentations by Peter Kingston and Robin Rindfuss from the London Events page at: www.spe-uk.org

Aberdeen

Shocks and vibrations at Aberdeen meeting!

SPE Aberdeen Young Professionals hosted an entertaining masterclass on managing the often-misunderstood drilling issue of shocks and vibrations, presented at the Aberdeen Section monthly technical meeting by Martin Hayes, of Schlumberger*.

Martin, who specialises in directional drilling engineering, wellbore surveying and drilling optimisation, discussed the results, causes and management of shocks and vibrations, using pictorial examples and 'drillstring' props to really bring the message home to his audience. First, he defined the term as "the dynamic mechanical excitation that may cause a dynamic response of a physical system that is exposed to that excitation. In general, shocks are an excitation over a relatively short duration; vibration is an excitation over a relatively long duration."

After highlighting a variety of failures related to shocks and vibrations – including direct equipment failure, fatigue, energy loss during drilling, and tortuosity and spiralling to the wellbore – he turned to the management of the phenomenon, explaining that management techniques need to be both reactive and proactive, flowing through the cycle of equipment design, execution of a well, evaluation and back into design.

Shocks can be designed out by "making tools tougher", protecting equipment with shock guards, and carefully considering the different bottom hole assembly (BHA) design options available, which he described in a useful 'Bit Selection 101'.



Standard (ie torque and drag and tendency) drillstring modelling can be used to infer potential problems, he added, with frequency domain and transient modelling used to provide more in-depth detail. However, modelling is limited by assumptions of potential unknowns, including formation properties, component imbalance, BHA misalignment, damping and contact point friction, and its real power lies in its use as a guide alongside actual drilling data in the execution phase.

Turning to monitoring and mitigation, Martin stressed the importance, before applying such techniques, of defining who monitors shocks and vibrations, why they are being monitored and who makes the decision on how and when to mitigate observed measurements. After discussing the challenges and the diagnosis methods, he gave some practical advice on mitigation methods during drilling and to explain why continuous improvement in the form of review and redesign is another key aspect of the shocks and vibrations management process.

In the final part of his talk, Martin explained that managing shocks and vibrations is, effectively, managing drillstring fatigue, since fatigue is the major cause (77%) of drillstring failure and shock and vibration dynamic motions are key contributors to fatigue.

And, he concluded, while shocks and vibrations management is only one part of the rate of penetration (ROP) optimisation process, introducing it at an early stage and getting it right will have a very positive and significant impact.

* Martin Hayes is now working for Torus Insurance, in London.

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

Student Focus...

The Vale of Eden rocks!

Salford University Student Chapter made excellent use of a £1000 sponsorship award from SPE London with a spring visit to the Vale of Eden, Cumbria, where the students were able to examine first-hand the geology and petroleum reservoir analogues of the area.

The field trip was organised by Mohamed Nagib, Petroleum Engineering Lecturer and Leader of the University's School of Computer Science and Engineering Petroleum Technology Research Group. The field activities were guided and presented by Dr Richard Corrier, Senior Lecturer at Leeds School of Geoscience.

"It was a very successful trip and the feedback was excellent," says Mohamed. "We are most grateful to SPE London for its generous sponsorship. The Section's support means a lot to us."



RGU Student Chapter attends OTC 2011

In May, a number of students from the Robert Gordon University Student Chapter made a transatlantic trip to Houston to attend the 2011 Offshore Technology Conference (OTC).

The enthusiastic group attended several technical presentations and also visited a range of stands in the exhibition halls, including those of Schlumberger, Saudi Aramco, MI Swaco, Welltec, FMC, Expro, Aker Solutions, and many more.

"It was the largest exhibition we had ever attended, featuring a range of technical attractions – some of us saw ROVs and new subsea riserless interventions for the very first time," says Chapter President Deji Adebeshin.

"We also made several relevant contacts and attended short presentations by Aker Solutions and FMC. The fully-packed conference included a number of interesting topics which gave some of us ideas for our research subjects."



She's a star!

High-achieving University of Aberdeen Petroleum Engineering undergraduate Nurkenay Bulekbayeva is in the spotlight this spring, having received two significant awards for her academic achievements and proactive SPE membership.

Nurkenay, Vice President of the University's Student Chapter, received news that she had won the prestigious SPE STAR Scholarship (North Sea Region) within only a month of receiving a top Student Bursary Award of £3000 from SPE Aberdeen. As a STAR Scholar, Nurkenay will receive her prize of \$2500 at the President's Dinner, at SPE's Annual Technical Conference and Exhibition (ATCE) in Denver, Colorado, in October. The Aberdeen Section is sponsoring her trip.

"This scholarship sets me on the road to further success in my career and I'm very glad that industry is doing its best to support and help develop students as the next generation of professionals," says Nurkenay. "The STAR Award is significant not only for me but also for my University, given our undergraduate Petroleum Engineering degree programme at the University of Aberdeen is still in its infancy. I am glad to be one of the first flag bearers for it."

SPE dedicates more than one million dollars to the annual STAR Awards across its 15 global Regions.



Best in class

The top three winners of this year's SPE Aberdeen Student Bursary Awards were honoured at the Section's evening meeting, in April.

Nurkenay Bulekbayeva (University of Aberdeen), who also won this year's SPE Regional STAR Scholarship, together with **Arief Budiman Hermani**, left (**Robert Gordon University**) and **Seyyed Mobeen Fatemi** (**Heriot-Watt University**), each received prizes of £3000 from SPE Aberdeen Chair Chris Nussbaum, who warmly congratulated them on their excellent achievement.



Further awards of £300 went to: **Sergei Kelm**, **Pal Bipin Kumar**, **Caroline Suttie**, **Dmitriy Klinchev**, **Mazhar Uddin**, **Joanna Alice Farquharson** and **Lars Petter Tennfjord** (**University of Aberdeen**); **Andrew Clarke**, **Dejan Ristic**, **Ninad Ashok Lele**, **Reza Sanaee**, **Zofia Korczak**, **Richard Cameron Bunce** and **Chingiz Sargozhin** (**Robert Gordon University**); **Nsikak Ambrose Udo**, **Hamdi Hamidreza**, **Onyinye Amu-Nnadi** and **Asaad Abdollahzadeh** (**Heriot-Watt University**), and **Sara Zahidi** and **Obinna Chris Dike** (**University of Dundee**).

The winning undergraduate and postgraduate students were selected by SPE assessors on behalf of the Section's Student Development Committee, on the basis of their academic performance, involvement with the SPE, plans to develop a career in the industry, and leadership and involvement in CSR (corporate social responsibility) activities.

"Congratulations to Nurkenay and to all the Bursary Award winners. I am glad you all are setting role model examples among the student communities within your universities. I wish you all the best for your further career enhancement plans." **Shankar Bhukya**, SPE Aberdeen Student Development Committee Chair



ABERDEEN

June YP Workshop: 'Economic modelling of upstream projects'

This latest event in the SPE Aberdeen YP Discover Series will consider the types of analysis carried out by petroleum economists, commercial advisors and/or finance experts, and how these have a powerful influence on a wide spread of activities across the industry. The session, designed to help YPs from a variety of disciplines to improve their understanding of this all-important subject area, will cover:

Introduction

- why/when the oil industry performs economic modelling

Life cycle of an Upstream project

Handling of the project profiles

- production and cost profiles

Calculation of cash flows for an Upstream project

- description, pre-tax and post-tax cash flow

The use of undiscounted and discounted terms

Modelling on nominal and real terms

Tools used in the industry

Conclusions

The discussion will involve simple examples and a quick hands-on exercise, therefore participants are requested to bring along their calculators to achieve maximum benefit from the event.

The workshop will be presented by Gerardo Arteaga, Business Development Executive at Centrica. After completing an MSc in Hydrocarbon Enterprise from the University of Aberdeen, Gerardo was Senior Petroleum Economist with AUPEC, a well-known niche consultancy in petroleum taxation and economics based in Aberdeen. Since 2007, he has been a part-time lecturer at the University of Aberdeen. Gerardo is an active member of SPE Aberdeen and recently became a Chartered Engineer in the UK.

Date: 22 June, 2011

Venue: Shell Woodbank, Woodbank House, North Deeside Road, Pitfodels, Culter, Aberdeen

Prices: £10 GBP (SPE members); £5 (students); £15 (non-members)

Programme: 6-7pm: Technical Session; 7pm onwards: networking session over light refreshments and finger buffet.

The SPE Aberdeen Young Professionals thank EnQuest and Shell UK for supporting this event.



LONDON

'Building Career Resilience' with Penna

A helpful half-day career development workshop for SPE YPs, facilitated and kindly sponsored by Penna HR Consulting, provided an engaging opportunity for the YPs to evaluate their career paths to date and make strategic decisions to ensure they maintain the right direction towards their desired goals.

The interactive event included:

- Reviewing areas of personal and career resilience that need to be developed or improved
- A goals-setting (short, medium and long-term) coaching session and reality check, weighing the options for going forward, and having a personal action plan.
- Analysing personal drivers for active career management, such as technical expertise, security and stability, work-related values/ethics, and the motivation for work-life balance.

The workshop also covered topics such as the different types of career path and possible options for career direction; using the '360-degree Feedback' career management model; personal drivers, and the value of social networking.

YP Co-Chair Alejandro Primera comments: "By the end of the event, it was clear that when evaluating your career options, you need to know what you really want and what matters to you. While some of the drivers may be outside your control, you can take positive steps to make sure that you influence those things within your control to better suit your career profile."

For further information about Penna please contact George Griffin, tel: +44 (0)7747 485001; George.Griffin@Penna.com; www.penna.com

Continuing Education

ABERDEEN

SPE ICOTA 17th European Well Intervention Round Table

15-16 November 2011,

Aberdeen Exhibition & Conference Centre (AECC)

Europe's principal forum for the discussion and exhibition of well intervention technologies.

Abstracts of 200 words are invited – deadline 15 July 2011.

Submit online at: www.rodgerandco.com, or contact Rodger and Co, tel: + 44 (0)1224 495051; spe@rodgerandco.com

SPE European Artificial Lift Forum – EuALF 2012

22-23 February 2012, AECC

Conference and exhibition on all types of artificial lift, including ESPs, jet pumps and gas lift.

Submit an abstract at: www.rodgerandco.com

Sponsorship and exhibition stands can now be reserved for both of the above events. Contact: jane.rodger@rodgerandco.com

SPE SMN European Sand Management Forum

21-22 March 2012, Aberdeen

Register your interest now as an exhibitor or sponsor.

Contact: jane.rodger@rodgerandco.com



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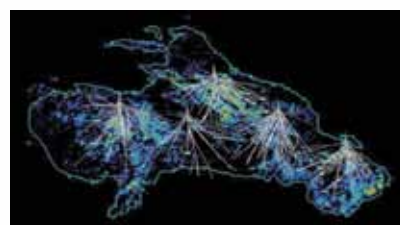
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CALL FOR ABSTRACTS: DEADLINE JUNE 30

Tertiary Fan Reservoirs of the North Sea

31 August - 2 September, 2011

University of Aberdeen, Aberdeen, UK



The discovery of the giant Forties Field in 1970 triggered a 40 year history of exploration and exploitation of Tertiary deep marine fan reservoirs in the North Sea.

To date there has been no event specifically dedicated to these important reservoirs which have made such a major contribution to the success of this hydrocarbon province and continue to present opportunities from new exploration discoveries through to the re-development of mature fields.

This conference aims to showcase the geological diversity that exists across a range of depositional and structural settings and highlight the uncertainties and challenges in finding and developing hydrocarbons from these complex reservoirs. The event will consist of a core workshop followed by two days of talks and poster sessions. There is also a conference dinner scheduled on Thursday 1st September at the University of Aberdeen.

For further information and registration, please contact: Steve Whalley, Event Co-ordinator: +44 (0)20 7432 0980 or email: steve.whalley@geolsoc.org.uk



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Arkwright Scholar seeks industry work experience for summer 2011!

An enthusiastic school student whose sixth-form studies have been enhanced by SPE London sponsorship is looking for a chance to give something back to the industry while gaining valuable experience in the oil and gas sector.

Conor McCarthy, a recipient of the £2000 Arkwright Scholarship, is seeking a summer work placement as the next step towards his future career in engineering.



"The scholarship has given me a new perspective when it comes to schoolwork and has shown me what I can really achieve. This has had a significant effect on my studies and I am hoping to build on this during the holidays with some industry work experience," he says.

The Arkwright Scholarships Trust is a registered charity, established in 1991 by Design & Technology (D&T)

teachers keen to promote careers in engineering among Year 11 pupils. The Trust believes that young people, including those from disadvantaged backgrounds, who are particularly able, should receive the support and encouragement they need to reach their full potential. The Trust invites high-ability 15/16-year-old D&T students who are planning to study maths and physics and have an interest in engineering, to apply for an Arkwright Scholarship as they start their 'A' Level/Scottish Highers courses.

"We are delighted that SPE London has chosen to support The Arkwright Scholarships Trust," says the Trust's Charity Relations Manager Georgina Hare. "As Arkwright celebrates its 20th Anniversary in 2011, there is still an enormous amount of work for us to do. Working in partnership with schools across the UK, with funding from engineering companies and organisations, we aim to ensure our brightest students are given the inspiration and encouragement they need to become Britain's next generation of talented young engineers."

Conor, a student at Strathallan School, Perthshire, says he is also very grateful to SPE London: *"The Arkwright Scholarship means a lot to me. I am extremely proud of my achievement and it has given me a boost in confidence."*

"The scholarship will be very useful when it comes to applying to university and will give me a lot more opportunities for work experience, as the Arkwright organisation notifies any scholars of upcoming scholarships and also some exclusive opportunities available only if you have been awarded a scholarship. Having so much support there is very helpful."

SPE London outgoing Chair Thijs Kuiper adds: *"The SPE London Board was looking specifically to support young students about to make decisions around pursuing engineering degrees, and that's why we selected Arkwright. Our sponsorship of Conor would be greatly complemented if a member of the SPE UK community could offer Connor a work experience this summer."*

The Arkwright Scholarship

Arkwright Scholars pass a rigorous selection process and will be Ambassadors of flourishing Design and Technology and Maths Departments in their schools. Scholarships are supported by industry, charitable trusts, the Services, institutions, associations and personal donors. Scholars are actively encouraged to develop the partnership with their sponsor, which can result in work experience, specialist support for their design and technology project and even sponsorship through university.

Scholars have access to:

- Arkwright Alumni website
- Career Awareness Days
- Networking opportunities
- Personal development opportunities
- Sponsors' websites
- Arkwright Scholar Group on Facebook

Arkwright
SCHOLARSHIPS



If your company is interested in sponsoring a young engineer of tomorrow, or can offer Conor a summer work placement this year, please contact Georgina Hare on tel: 01926 333219; ghare@arkwright.org.uk

www.arkwright.org.uk



Education Day at All-Energy 2011

Pupils and teachers from North-east of Scotland secondary schools enjoyed an exhilarating Education Day at the All-Energy 2011 conference and exhibition, in Aberdeen, in May.

The initiative, at Aberdeen Exhibition and Conference Centre (AECC), was organised as part of the main event programme by Aberdeen Council, Aberdeenshire Council, the Energy Institute and SPE Aberdeen, to raise awareness of the renewables sector and the key role oil and gas has to play in the energy mix of the future.

One of the highlights was the final of the online 'Electricity Challenge', where youngsters from Meldrum, Peterhead, Mackie, Turiff and Mintlaw Academies went head-to-head in making crucial decisions on how to sustainably power a city with a growing population. Representatives from a range of businesses also led Round Tables to provide valuable industry information to subject-specialist teachers and career guidance experts.

Colin Black, who chairs SPE Aberdeen's Careers Guidance Committee, explains: *"The event focused on sharing information with teachers and pupils so that they are better informed about the whole energy sector and the careers available within it. It's important to remind them that the future energy mix includes hydrocarbons as well as renewables and that the oil and gas sector has an important part to play for decades to come."*

He adds: *"This is a global energy industry with many opportunities for young people – SPE Aberdeen aims to continue to provide background information, facts, guidance on career paths and information on how to enter the industry. Education Day at All-Energy is a positive step towards this."*

SPE Aberdeen, along with other host companies, provided tour guides for teachers and pupils to meet many of the businesses exhibiting at the show.

SPE Aberdeen's collaboration with schools is part of the global SPE initiative www.energy4me.com and section volunteers will be working closely with Scottish schools during various events throughout the school year. Anyone wishing to lend support should contact the Career Guidance Committee at: CG-Aberdeen@spemail.org



Colin (second from left) with some of the teachers

FORTHCOMING UK EVENTS

LONDON

- 9 June: SPE London 40th Anniversary Ball
VENUE: Claridge's Ballroom, London

ABERDEEN

- 22 June (6pm): YP Discover Series Workshop – ‘Economic modelling of upstream projects’
VENUE: Shell Woodbank, Woodbank House, North Deeside Road, Pitfodels, Cults, Aberdeen

CONFERENCES/EXHIBITIONS

- 15-16 November: SPE ICoTA 17th European Well Intervention Round Table
- VENUE: Aberdeen Exhibition & Conference Centre (AECC)
- Abstracts of 200 words are invited – deadline 15 July 2011**
- Submit online at: www.rodgerandco.com

EDINBURGH

- 15 June (6.30pm): 'The challenges of carbon capture and storage in the North Sea', Ian Phillips (CO₂ Deepstore)
- VENUE: University of Edinburgh Faculty Room South, David Hume Tower, George Square, Edinburgh, EH8 9JX

For details of all SPE Aberdeen and Edinburgh events, please visit: www.spe-uk.org 'Aberdeen Events'

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