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SPE NEWSLETTER

JANUARY 2010

Our thanks go to Chevron for sponsoring November’s meeting, where SPE Distinguished Lecturer, Xuri Huang gave an account of the links between geophysics and reservoir engineering. Xuri spoke more of the basic checking of simulation models against available (e.g. 3D) seismic, rather than time-lapse seismic. The talk provoked comments about the novelty of the methods presented – some of which were strongly critical. Other members in the audience noted that, even if the approach is not new, there were some interesting points made and a useful reminder given of the value of discipline integration. All feedback on meeting speakers is of course welcomed and, in the case of distinguished lecturers, will be forwarded to SPE as part of the continued effort to improve SPE services to members. We hope all SPE members, including those more critical of the current programme, will assist SPE in securing the highest quality speakers for the Distinguished Lecturer programme through suggesting nominations for the future seasons. So please

let the Board know if you would like information on nominating one of your peers.

By the time you read this we should also thank DONG for sponsorship and presenting at the January meeting on the Oselvar field development in Norway. Our next two meetings take us to wider areas geographically and in terms of reservoir types. In February Tim Newman will summarise the well engineering aspects and also give an overview of the scope of the major greenfield Sakhalin II project recently brought onstream by Shell in the far East of Russia.

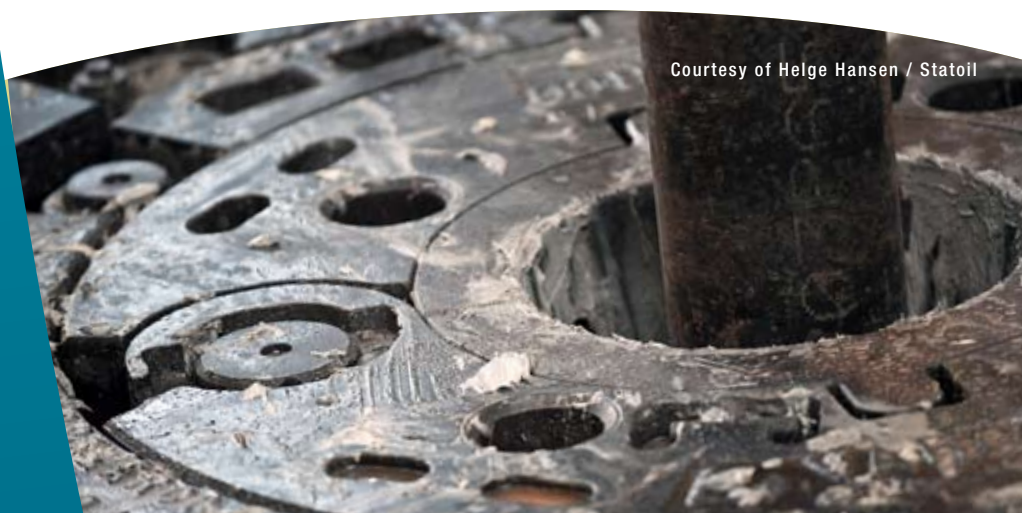
In March we are again pleased to host an SPE Distinguished Lecturer, Khosrow Biglarbigi whose topic will be unlocking the billions of barrels of oil held in oil shales – a technological step beyond the current major growth in shale gas recovery whose emerging prominence is so well illustrated by Exxon’s recent multi-billion dollar acquisition of XTO.

Please join us on 11th February at Charlottehaven for the Sakhalin talk.

Dave Walsh, Section Chairman

FUTURE MEETINGS

FOR MORE INFORMATION
REGARDING THE PROGRAMME
SEE PAGE 6



Courtesy of Helge Hansen / Statoil

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MANAGING DRILLING LOSSES IN CARBONATES – SHELL'S APPROACH.

Carbonate structures such as limestone and dolomite often contain fractures or caves. These may cause total losses into the empty spaces in the rock and will cause the well to go underbalanced at the top of the reservoir. In other words, the gas or oil will flow into the wells and very quickly up to the surface. These are known as 'kick' situations, where gas expands at an increasing rate as it migrates up the drilling annulus, rather like the nitrogen in a diver's bloodstream expanding as he comes to the surface. The gas volume at the surface may be immense, so the loss of the primary well control barrier (the drilling mud), becomes a major safety concern, with a real danger of the well going out of control.

In the past, some operators have continued drilling with total losses by pumping sufficient mud or water into the drilling annulus, flushing the gas down into the cave. This is known as floating mud cap drilling. Unfortunately, when using floating mud cap, you can never be sure if you are flushing the gas away quick enough, unless you pump massive amounts of mud or water into the annulus. Sometimes, pumping this much mud or water is logistically or economically impossible, leading to a safety risk when people try to minimise the amount of mud lost, but have no safe way of knowing if they are pumping enough (other than taking a big kick if they are wrong).



The solution, developed by Shell, is pressurised mud cap drilling. This technique has been made possible by the development of a rotating control head. The device uses a bearing assembly to provide a pressure seal around the drill pipe just above the blowout preventers at surface. This forms a pressure seal on the annulus, while still allowing the pipe to be rotated and drilled further into the ground.

This way, if we come across a total-losses zone, the rotating control head enables contingency plans to reduce the annular mud weight until fluid levels, plus a little bit of pressure, are seen at surface. This allows us to monitor the annulus pressure to determine if we are taking a kick, before it gets to be a big kick with gas expanding as it come up the hole. By detecting the kicks down hole when they are small, we can safely minimise the annular mud losses rate with its associated cost and formation damage. Like most good ideas, with hindsight it seems pretty simple!

Pressurised mud cap drilling was successfully trialled offshore in a couple of operations in the Philippines and Venezuela, but Malaysia is where we really perfected it. The gas-bearing formations of Borneo offer similar carbonate structure to the parts of the Qatar North Field (Pearl GTL and Qatar Gas 3 & 4 projects) where the technique is now being used.

From a cost point of view, the technique does add to the total cost of a well, but we know that experiencing total losses using conventional techniques adds significantly more than this figure. In some instances of total losses, we have had to stop drilling, resulting in reduced production from the shallower wells. There is even the risk that you have to abandon the well completely. Pressurised mud cap drilling is safe and helps ensure we drill wells to the planned depth with reduced risk of large budget over-runs and blowouts.

Join a webinar at the German SPE Section

The German SPE section has drawn our attention to their webinars, where they would like to welcome members of the SPE.

Please find dates, titles and instructions to join a webinar at

www.gsspe.de

WELL ENGINEERING,

Platform Rig Start-Up and Well Operations in the Sakhalin 2 Project



Well Engineering, Platform Rig Start-Up and Well Operations in the Sakhalin 2 Project

The Sakhalin-2 license block comprises the Lunskeye and Piltun Astokhskoye fields, discovered and appraised in the mid 1980's by Soviet oil and gas production associations. In 2008 the PSA operator, Sakhalin Energy Investment Company, a joint venture between Gazprom, Shell, Mitsui and Mitsubishi brought both fields on stream.

The fields are situated 10 to 15 km offshore Sakhalin Island in Russia's Far East region. The location is remote, with little offshore infrastructure initially in place. Climactic conditions are extreme with ice hazards and temperatures as low as minus 35 C in winter combined with near tropical conditions in summer. Sakhalin Island lays in an earth-

quake prone area with recent events reaching 7.5 on the Richter scale, oil and gas facilities must be designed to tolerate such conditions and more.

The presentation consists of a case study covering the early history of the oil and gas industry on Sakhalin, moving on to the drilling and production facility concept selection, construction, installation, start-up and finally operation. Specific challenges faced by the operator included well design to accommodate gas rates as high as 480 MMscft/day from a single well, drilling waste management, well integrity and equipment operation in extreme temperatures, and a complex regulatory environment. The operators chosen solutions to these challenges will be presented, together with the lessons learned.

Nominal oil and gas production from Sakhalin-2 is 150 000 bopd and 1 800 MMscft/d respectively. Export is via a 48" gas and a 24" oil pipeline, traversing 800 km of mountainous terrain to reach a newly constructed LNG export terminal, these aspects will also be addressed in summary format. ◀

COPENHAGEN FEBRUARY MEETING

THURSDAY 11 FEBRUARY 2010

PROGRAMME

17:00 - 18:00
Drinks

18:00 - 19:00
Presentation and SPE News

19:00 - 21:00
Dinner

LOCATION

Charlottehaven A/S
Hjørringgade 12C
2100 København Ø

SPEAKER

Tim Newman
Principal Drilling Engineer,
Shell International

TOPIC

Well Engineering and the
Sakhalin 2 project

ENTRANCE FEE

None

REGISTRATION

Please indicate your attendance
by Tuesday 9 February
by signing up on the internet
www.spe-cph.dk

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BIOGRAPHY

Tim Newman

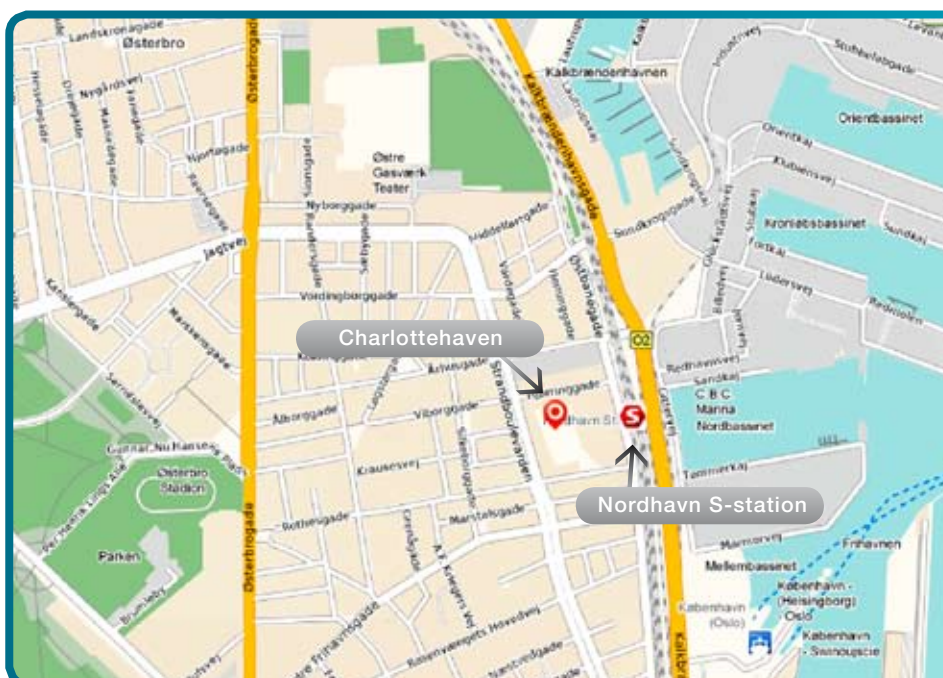


Principal Drilling Engineer – Shell International

Tim Newman is currently working with Shell Olie og Gasudvinding Danmark B.V., based in Copenhagen. He began at Shell International in 1980, since then he has worked in a variety of operational, technology development, field development and team leadership positions in The Netherlands, West Germany, Thailand, Nigeria, USA, Russia and Denmark.

He has supervised HP/HT drilling operations in Nigeria, led the team responsible for the well engineering concept selection for the Bonga and EA developments, also in Nigeria, led the technology team which developed the equipment required to drill using a Surface BOP in 9 800 feet water depth in Brazil. Prior to taking up his current assignment he was Head of Well Delivery for the Lunskeye gas field development in Sakhalin.

Tim published and presented two papers at the SPE conference, 2004 in Dallas. ◀



MEETING SCHEDULE :2009-2010

September 22			MAIN SPEAKER	AFTER DINNER
TOPIC	The Future of Reservoir Exploitation			
SPEAKER	Paul Hazel, Welltec			
LOCATION	Welltec			
SPONSOR	Welltec			
October 27			MAIN SPEAKER	AFTER DINNER
TOPIC	Water Management: Some simple diagnostic methods			
SPEAKER	Jon Elphick, Schlumberger			
LOCATION	Charlottehaven			
SPONSOR	Schlumberger			
November 19			MAIN SPEAKER	DINNER SPEAKER
TOPIC	Close-the-loop Between Geophysics and Reservoir Engineering			
SPEAKER	Xuri Huang SPE DL			
LOCATION	Håndværkerforeningen			
SPONSOR	Chevron			
January 19			MAIN SPEAKER	DINNER SPEAKER
TOPIC	Reservoir Engineering for the Oselvar Field			Wave and Tidal Energy
SPEAKER	Christan Høier, DONG Energy			Jon Vindahl Kringelum, DONG Energy
LOCATION	DONG Energy			
SPONSOR	DONG Energy			
February 11			MAIN SPEAKER	DINNER SPEAKER / DISCUSSION
TOPIC	Well Engineering and the Sakhalin 2 project			
SPEAKER	Tim Newman, Shell			
LOCATION	Charlottehaven			
SPONSOR	Shell			
March 18			MAIN SPEAKER	DINNER SPEAKER
TOPIC	Unlocking Ten Trillion Barrels of Global Oil Shale Resources			
SPEAKER	Khosrow Biglarbigi SPE DL			
LOCATION	Håndværkerforeningen			
SPONSOR	HESS			
April 22			MAIN SPEAKER	DINNER SPEAKER
TOPIC	Valdemar - from Marginal Field to Third Largest Danish Producing Field			
SPEAKER	TBA			
LOCATION	Maersk			
SPONSOR	Maersk			
May 27			MAIN SPEAKER	ANNUAL MEETING
TOPIC	Listening to the Reservoir - Interpreting Data from Permanent Downhole Gauges			
SPEAKER	Roland Horne SPE DL			
LOCATION	GEUS			
SPONSOR	GEUS			
June 19			MAIN SPEAKER	DINNER SPEAKER
TOPIC	June Summer party			
SPEAKER				
LOCATION	TBA			
SPONSOR	Schlumberger			



This is Noreco

FASBY
foto: Geir Egil Bergsjord

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SPE STUDENT SCHOLARSHIP

The 2009 SPE student scholarship has been awarded to Peter Sommer-Larsen who graduates from DTU in June 2011 with a Masters degree in Petroleum Engineering. Peter Sommer-Larsen holds a Bachelor degree in Nanotechnology.



In his application, Peter Sommer-Larsen wrote: The main goal with my master in Petroleum Engineering is to first obtain a good understanding of advanced mathematics and numerical problem-solving. Among these I have a passion for functional analysis, optimization and differential equations. Though I like to solve these complex problems they need to be part of a deeper purpose - and this is where the petroleum industry comes into the picture. This is, in my opinion, an industry that has a lot to offer. It has loads of opportunities, problem-solving, big machinery, travels, multicultural relations, endless discussions, programming, optimization, money and much more - a lot of things that I like.

The SPE board hereby congratulates Peter with the award and wishes him all the best in his future career.

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Unlocking Ten Trillion Barrels of Global Oil Shale Resources

THE STATE OF THE INDUSTRY

The development of domestic oil shale resources has regained significant attention in the past few years. Several factors have contributed to this, including high oil prices, emerging recovery technologies, increasing world demand for liquid hydrocarbons, and the continued decline in U.S. conventional oil production. In recent years, several initiatives have been taken by the Federal Government and the private sector to encourage the development of a domestic oil shale industry.

The United States has vast deposits of oil shale – Nearly 2.0 trillion barrels across the eastern and western states. The development of this massive resource, however, is constrained, however, by a number of key factors including, but not limited to; 1) resource access, 2) technology, 3) economics, 4) environmental and regulatory issues, and 5) infrastructure.

A comprehensive analysis has been completed to address these issues and identify options to accelerate the development of this resource. The analysis is based on a representative sample (about 70 Billion Barrels) of Western Oil shale resource divided



Loose oil shale, from the Mahogany Zone.

among multiple development “tracts”. Four (4) production technologies were also considered. These technologies included emerging in-situ processes as well as traditional mining with surface retorting technology. Each development “tract” was screened for the potential application of each recovery technology. A detailed economic evaluation was conducted for each “tract” and the selected technology with consideration for development under alternative economics, environmental, technology, and socio-economic options. The analysis indicated that with a concerted effort from industry, local, state, and Federal governments, the oil shale production potential could reach 2.5 million barrels per day (MMBbl/d) with substantial benefits to the local and national economy. ◀



Outcropping in the Mahogany Zone, the richest oil shale deposit in the United States.

COPENHAGEN MARCH MEETING

THURSDAY 18 MARCH 2010

PROGRAMME

17:00 - 18:00

Drinks

18:00 - 19:00

Presentation and SPE News

19:00 - 21:00

Dinner

LOCATION

Håndværkerforeningen
Dronningens Tværgade 2 A
1302 København K

SPEAKER

Khosrow Biglarbigi
SPE DL

TOPIC

Unlocking Ten Trillion Barrels of
Global Oil Shale Resources

ENTRANCE FEE

None

REGISTRATION

Please indicate your attendance
by Tuesday 16 March
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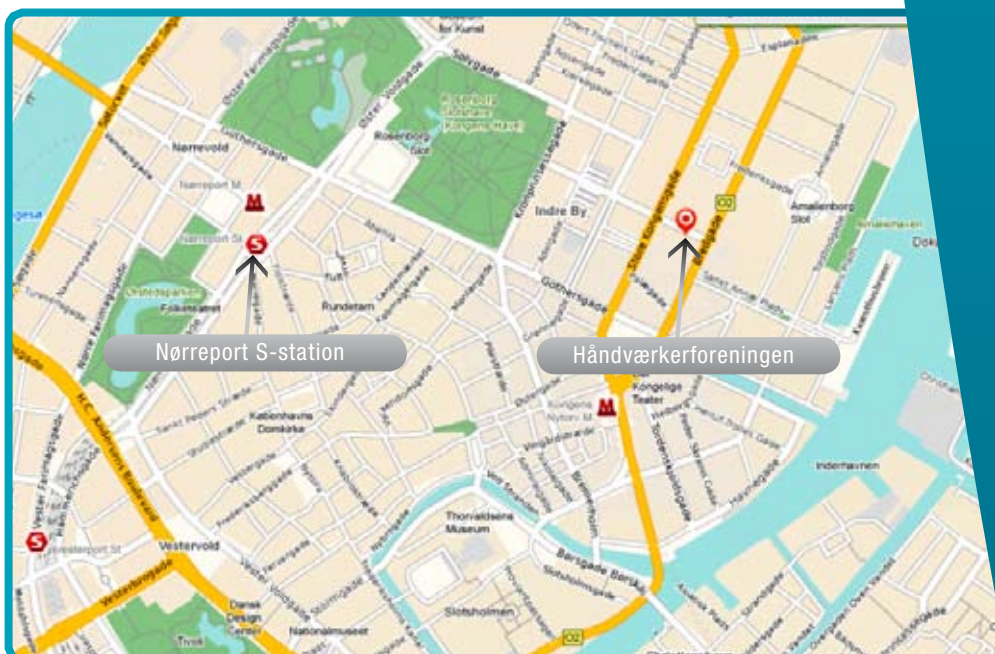
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BIOGRAPHY

Khosrow Biglarbigi

Mr. Khosrow Biglarbigi is the President and Director of Petroleum Engineering of INTEK Inc, an energy management consulting firm in Arlington, VA. He has over sixteen years experience in evaluating conventional and unconventional oil and gas resources, economic analysis, and public policy analysis. Mr. Biglarbigi recently provided engineering and analytical support to the Task Force on Unconventional Fuels (mandated by Energy Policy Act of 2005) as they identified and analyzed development hurdles for oil shale, tar sands, coal liquids, heavy oil, and CO₂ flooding; and conducted cost/benefit analyses of potential options to overcome these hurdles. Mr. Biglarbigi has earned both a M.S. and B.S. degree in petroleum engineering from the University of Tulsa. He has authored numerous publications related to oil shale, Enhanced Oil Recovery, Horizontal wells, resource evaluation and the development of oil and gas models. ◀





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