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# A TALE OF TWO WORLDS

At the SPE meeting earlier this month two presentations were held on very different topics. One was on drilling fluids and the other on career development. Both were excellent presentations, informative and enjoyable to watch, but what struck most was that the topics covered two distinct segments of the spectrum of challenges facing the energy industry.

The first, a Distinguished Lecturer presentation, was an example of the tremendous amount of science and technological development that goes into drilling muds, something considered mundane by many people. It turned out the electron microscope pictures and science of drilling fluids' interaction with various types of rock was an eye-opener to many and, besides their obvious business value, they could be fine examples to show for instance to high school students in order to raise interest in science and technology in general.

The career development story on the other hand illustrated the more personal challenges and opportunities that affect our industry. There's a need for continuous development

of personal capabilities, as well as industry capabilities, to adapt to an ever changing energy landscape. The presenter showed there are many pathways of combining technical and leadership assignments into a successful career, and also demonstrated through anecdotal evidence that a degree of flexibility on both the employee's and the employer's side is required.

The essence of being human is not just to adapt ourselves to the environment but also to adjust our environment to ourselves .. and both of these capabilities are essential to those working in the energy industry.

In this newsletter you'll find announcements on upcoming presentations on new technology by Welltec and on Source Rock potential that would benefit from new technology by GEUS. Also, we're delighted to announce the winner of this year's student scholarship (on page 7), and the upcoming summer party in Langelinie Pavillon on Friday the 14<sup>th</sup> of June (on page 11).

I'm looking forward to welcome you at the final three events of this season!

**Hans Horikx,  
SPE Copenhagen  
Section Chairman**



## FUTURE MEETINGS

FOR MORE INFORMATION REGARDING THE PROGRAMME SEE PAGE 6



# SPE

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# MAKING THE INTO CON

As horizontal drilling began to make its appearance in the 1990s, a visionary Danish company was born based on an innovative, entrepreneurial idea that came to revolutionize the oil and gas industry: The Well Tractor®. This new robotic precision technology facilitated a break-through in deploying and operating intervention tools into horizontal and highly deviated wells without the use of coiled tubing or similar heavy-duty equipment.

Being innovative was what the marketplace needed then and what still drives Welltec® today. An extensive Development and Engineering department continues to push the boundaries of what can be done to enhance recovery rates and enable operators to conduct interventions safer, faster and with higher accuracy.

## The perfect cut – a case story from Russia

The latest invention is the Well Cutter™, which made its debut in February 2012 with a successful pipe cutter operation offshore Russia. On that job, Sakhalin Energy was experiencing problems retrieving their completion after cutting pipe. The issue was thought to be caused by debris on the annular side of the tubing generated from the explosive cut and subsequent polishing run.

The Well Cutter™ was selected because it enables efficient drill pipe and casing recovery without the use of explosives. The tool is conveyed on e-line line for accurate depth control, and uses a self-centralizing rotating head to remove pipe incrementally, preventing the creation of shavings. The resulting cut is a smooth, polished surface, which may preclude further polishing.

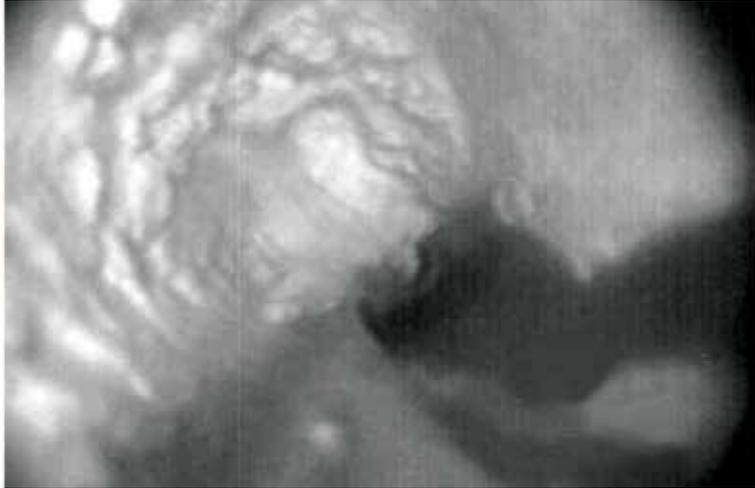
More recently the tool was used to cut through a Super13Cr mandrel of a packer without cutting the control lines on the outside of this intelligent completion. "The Well Cutter™ produced a clean cut with no flaring and minimal debris, just as marketed. Excellent performance and a perfect cut in the packer mandrel target area; spot on!" said Sakhalin Energy after the successful operation to retrieve the packer assembly.

## Award-winning technology

The benefits of the Well Cutter™ have been recognized by the industry. With barely a year on the market, the it has won Ingeniøren's Global Award, been



# UNCONVENTIONAL VENTIONAL



among the top five technologies at ONS 2012 and received the Spotlight on New Technology award at OTC; an award Welltec has won twice before with the Well Cleaner PST and Well Cleaner RCB.

## Milling and retrieving hard debris, RLWI style

Some time ago, one of Statoil's most important subsea wells was suffering from debris that had settled on top of a bridge plug, completely burying the fishing neck. The final 13 ft (4 m) of debris had settled into such a hard crust that it could not be retrieved using conventional slickline and e-line methods, and CT was not an option.

Welltec® developed an innovative RLWI solution based on the Well Cleaner® Reverse Circulating Bit (RCB) run with customized bits to break through the hard packed debris, collect it, clean the fishing neck, and then pull the plug. After retrieving 100 kg of hard packed debris, the Well Cleaner® Power Suction Tool (PST) was used to suck up any remaining debris around the fishing neck to allow for grappling. This tool is designed with extreme suction power, enabling it to collect larger pieces remaining downhole.

In the same run, the plug was caught by the fishing neck and pulled using the Well Stroker®.

The operation was a world's first and truly demonstrated the possibilities achievable with Riserless Light Well Intervention using e-line and robotic solution methods. Not only did Statoil save up to 12 months of lost production compared to rig based intervention, the field production increased by 33%.

## Dare to be different – conventionally unconventional

The milling and cleaning solutions alone have performed an increasing number of jobs in the past year, setting new records, and going where people said it would be impossible, e.g. cleaning hydrates and asphaltenes. The success is truly testament to the innovation and ingenuity of the team at Welltec, and the courage of the clients and partners who were willing to bet on new technology. Innovation is at the heart of Welltec as the company continues to address the challenges of tomorrow's needs and make the unconventional into conventional. ◀



# A novel, annular barrier FOR IMPROVED ZONAL ISOLATION AND CEMENT ASSURANCE

Achieving cement assurance for the life of a well becomes increasingly difficult as depths grow and well design and operations become ever more complex. The problem is escalated by mature fields with depleted zones and the desire and ability for extended reach wells.

To address this challenge, Welltec has joined forces with a number of operators to design, develop, and qualify a hydraulically expandable, all metal well annular barrier, which is assembled on the outside

diameter (OD) of a liner, while maintaining full-bore inner diameter (ID).

This presentation will review the design, development, and qualification of the Welltec Annular Barrier (WAB™) incl. material selection to achieve the required expansion, the unique outer seal design to deliver the pressure differential requirements, and intended applications to date. The WAB™ is qualified to ISO14310 V3 and manufactured in accordance with ISO9001. ◀



## ●● BIOGRAPHY.....



**Lambert Dilling, Sales Director, Europe, Welltec**

Lambert Dilling joined Welltec in 2011 as Sales Director for the Continental Europe area, and brings 16 years of international Oil and Gas experience in different fields. Starting as a field engineer for coiled tubing services in 1995 in the Netherlands, he has held

various positions in the Coiled Tubing Department in offshore operations for different clients on Deep Water and HPHT operations (Perforating, logging general fishing and completion tool jobs), as well as experience with Deep Water and HPHT. He holds a Bachelor in Petroleum Engineering, Hogeschool van Amsterdam (Netherlands) 1995. ◀

●● ABSTRACT .....

# Shale gas exploration and production prospects on specific Danish licenses

Total Exploration & Production has two open-door licenses, L1-10 and L2-10, onshore in Nordjylland and Nordsjaelland, covering 2,972 km<sup>2</sup> and 2,289 km<sup>2</sup> respectively. The two licenses were acquired by Total in June 2010 for a period of 6 years, following the purchase of Devon Energy Netherlands BV in 2010. The Danish State through the Danish North Sea Fund (Nordsøfonden) is partner in both licenses with 20% stake. The exploration objective for both licenses is shale gas.

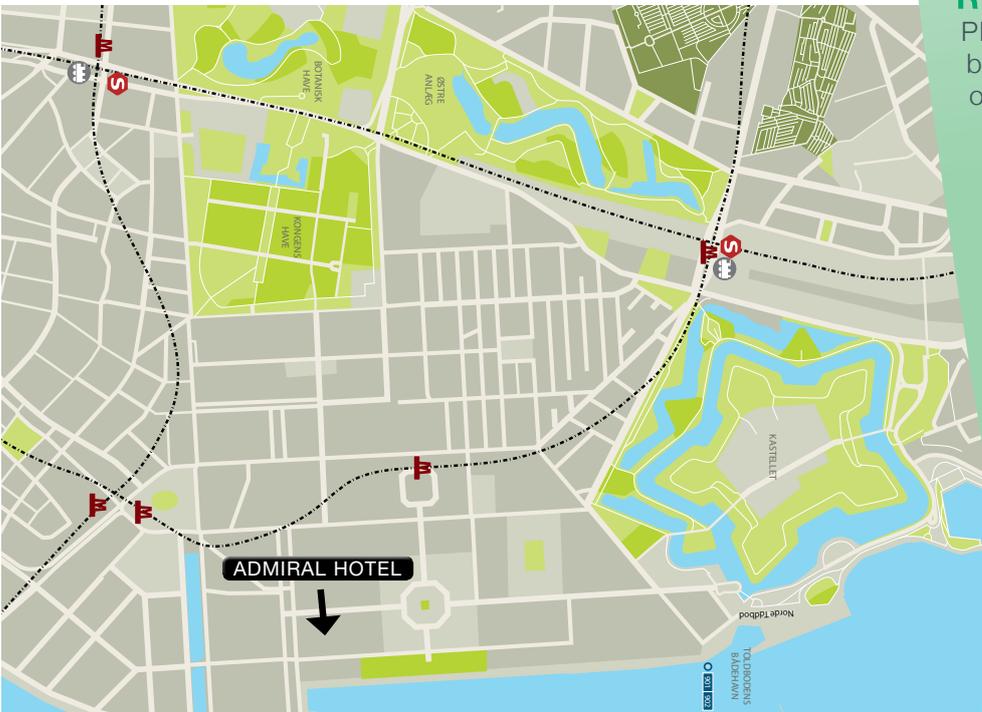
The presentation will comprise a general introduction to the different aspects of shale gas exploration and later possible production, as well as specific considerations regarding the actual work programs and beyond for each of the two licenses. ◀

●● BIOGRAPHY .....



**Henrik Nicolaisen,**  
**Senior Coordinator, Denmark, Total E&P Denmark**

Henrik Nicolaisen is Senior Coordinator for Total E&P in Denmark. He has worked in the Oil & Gas industry for 14 years, 9 of which he has been with Total. He is in charge of coordinating technical relations, public relations, and relations with authorities and stakeholders in general in relation to Total's two Danish licenses for shale gas exploration and production. ◀



## PROGRAMME

17:00 - 18:00  
Drinks

18:00 - 19:00  
Presentation and SPE News

19:00 - 21:00  
Dinner

## LOCATION

Admiral Hotel  
Toldbodgade 24 – 28  
1253 København

## SPEAKER

Lambert Dilling  
Sales Director, Europe, Welltec

## TOPIC

A novel, annular barrier for improved zonal isolation and cement assurance

## DINNER SPEAKER

Henrik Nicolaisen  
Senior Coordinator, Denmark,  
Total E&P Denmark

## TOPIC

Shale gas exploration and production prospects on specific Danish licenses

## ENTRANCE FEE

None

## REGISTRATION

Please indicate your attendance by Thursday 11 April by signing up on the internet [www.spe-cph.dk](http://www.spe-cph.dk)

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SPE MEETING SCHEDULE

# 2012-2013

<b>September 11</b>			<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>Putting The Energy Industry In Perspective</b>			Safety Management – learnt the hard way  Odd Sevlund
SPEAKER	Phil Rae - SPE DL, (InTuition Energy Associates Ltd)			
LOCATION	Shell Mikado House			
SPONSOR	SHELL			
<b>October 24</b>			<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>DTU Research</b>			Overview of the large projects at CERE – Center for Energy Resources Engineering, DTU  Alexander Shapiro
SPEAKER	DTU Ph.D Candidates: Alsu Khusainova, Esther Rosenbrand and Andrea Capolei			
LOCATION	DTU, Building 101 B auditorium 1			
SPONSOR	DTU			
<b>November 21</b>			<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>Denmark's first HPHT development: Hejre</b>			Geosteering in thin injected sands by optimised operational setup and state-of-the-art LWD - Nini East Field  Thomas Stærmosse, DONG E&P
SPEAKER	Søren Poulsen, DONG E&P			
LOCATION	DONG			
SPONSOR	DONG			
<b>January 14</b>			<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>Hydraulic Fracturing of Horizontal Wells – Realizing the Paradigm Shift that has been 30 Years in Development</b>			Oil Gas Denmark  Martin Naesby (Oil Gas Denmark)
SPEAKER	C. Mark Pearson - SPE DL, (Liberty Resources LLC)			
LOCATION	Moltkes Palæ			
SPONSOR	Hess			
<b>February 5</b>			<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>Farsund Formation Tight Reservoirs</b>			Johan Sverdrup – A North Sea Giant  Alessandro Mannini, Maersk Oil
SPEAKER	Nijs Nederveen, Maersk Oil			
LOCATION	Maersk			
SPONSOR	Maersk			
<b>March 7</b>			<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>What do we have to do to a drilling fluid to maximise well productivity ?</b>			Career management in Chevron – Technical vs. leadership path  Dino Metovich, Chevron
SPEAKER	Stephen Vickers - SPE DL, (Baker Hughes)			
LOCATION	Charlottehaven			
SPONSOR	Chevron			
<b>April 16</b>			<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>A novel, annular barrier for improved zonal isolation and cement assurance</b>			Shale gas exploration and production prospects on specific Danish licenses  Henrik Nicolaisen, Total E&P Denmark
SPEAKER	Lambert Dilling, Welltec			
LOCATION	Admiral Hotel			
SPONSOR	Welltec			
<b>May 14</b>			<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>Source Rock Potential in Denmark</b>			Annual General Meeting
SPEAKER	Henrik I. Petersen, GEUS (Maersk Oil from May 2013)			
LOCATION	GEUS			
SPONSOR	GEUS			
<b>June 14</b>			<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>SPE Summerparty</b>			
SPEAKER				
LOCATION	Langelinie Pavillon			
SPONSOR	Schlumberger			

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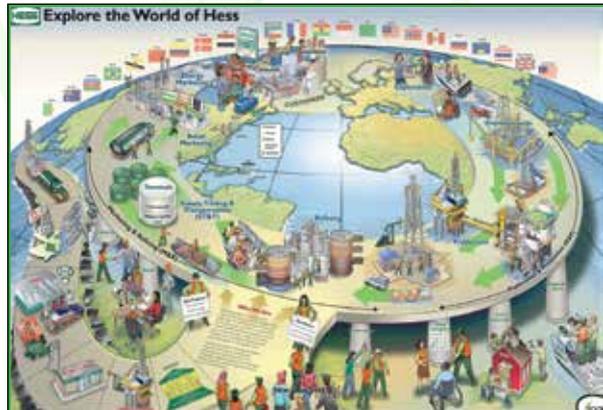
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## SPE Student scholarship award

The SPE board is pleased to announce that this year's student sponsorship has been awarded to Tobias Gram.

Tobias is a student of Geophysics at Copenhagen University and of petroleum related courses at the DTU. He has been a

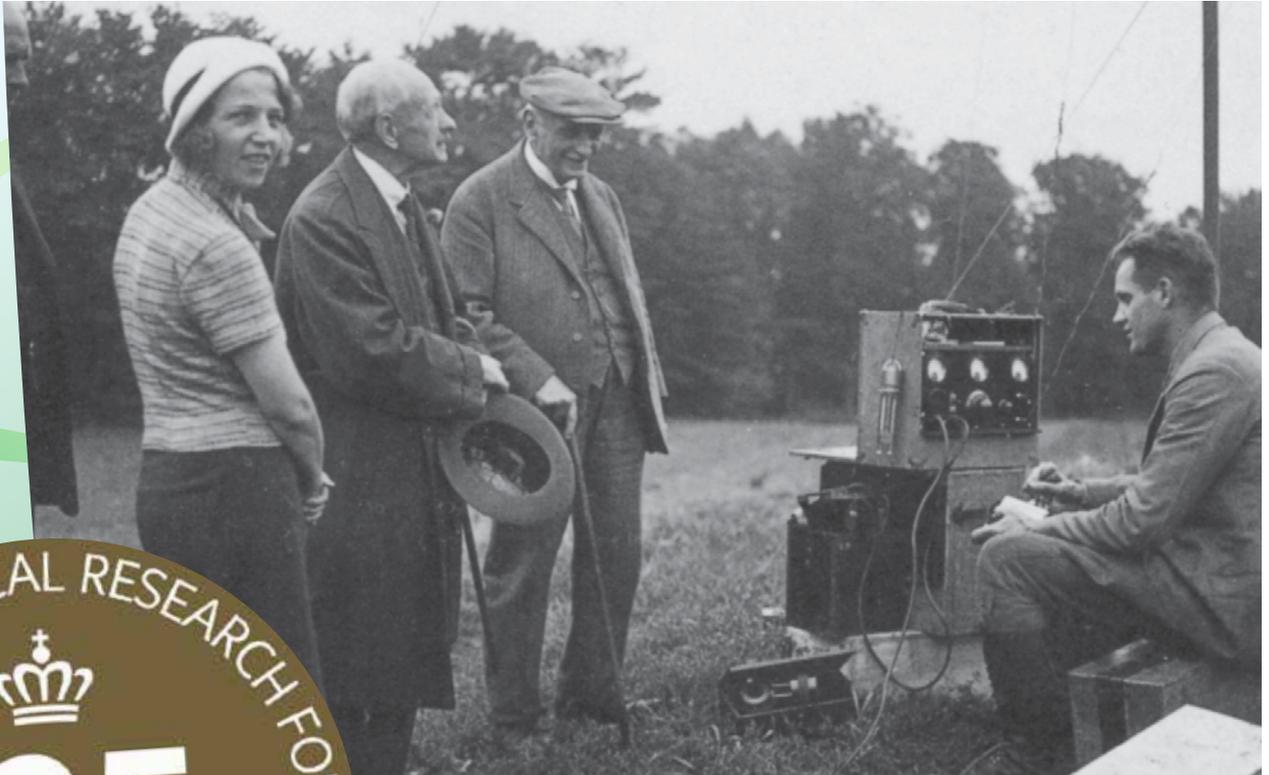
student assistant at the DMI, the Niels Bohr Institute, COWI and Maersk Oil and is currently writing a Masters thesis on 'Elasticity of reservoir chalk with partial fluid saturation'.

For the past 3 years Tobias has been a board member of the Geophysical Student Union at the University of Copenhagen.

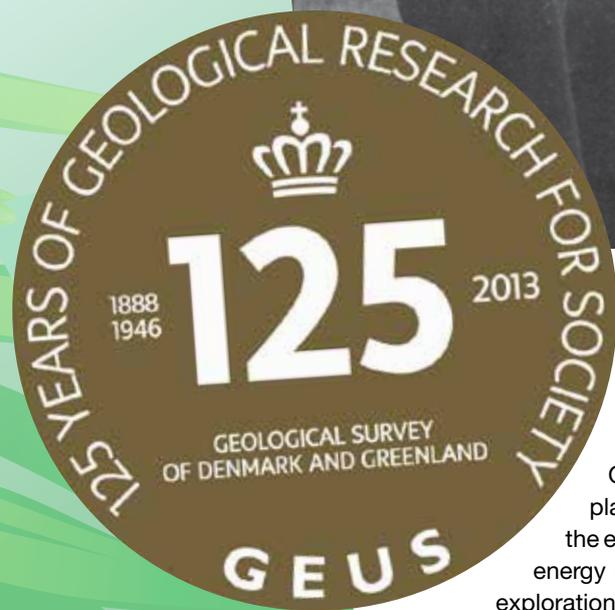


# 125 YEARS OLD, STILL ALIVE AND

By Henrik Højmark Thomsen, GEUS



*DGU director Victor Madsen (wearing a cap) is watching seismic measurements near Kolding in 1934*



This coming April, GEUS has delivered geological knowledge to Society for 125 years. Oil and gas research has played an important role in the efforts to create security of energy supplies and to develop exploration for sources of energy in Denmark and Greenland.

On 4 April, 125 years have gone since the birth of the first Geological Survey of the Kingdom of Denmark, viz. The Geological Survey of Denmark (DGU) established in 1888. In 1995, it merged with its younger sister organisation The Geological Survey of Greenland (GGU) to become the present Geological Survey of Denmark and Greenland (GEUS).

Throughout these many years, GEUS has contributed to ensuring clean drinking water, sufficient energy and raw materials as well as a sound environment. The first oil-related studies of the Danish underground began in 1929 when, with German assistance the

then Director of DGU, Victor Madsen, initiated magnetic measurements in southern Jutland. Since then, things have moved fast on the energy side. Thus DGU, GGU and now GEUS has studied the oil and gas potential of Denmark and Greenland for many years.

Presently, GEUS is running several oil- and gas-related projects. One of these, PETSYS, was launched in 2011 with the overall aim to present a synthesis of the Jurassic Petroleum System, covering prospectivity and hydrocarbon plays in the Jurassic of the Danish Central Graben. The study is carried out through collaboration agreements between GEUS and oil companies active in Denmark. In Greenland, the Bureau of Minerals and Petroleum in 2011 announced two new licensing rounds to take place in 2012 and 2013 for an offshore area in North-East Greenland. Since 2007, GEUS has been surveying the onshore area in order to update and expand the understanding of the oil-geological potential of the area; work which will help prepare the offshore area for the licensing rounds.

Input to regional geological compilations of interest to oil and gas exploration companies has been an important activity. The year 2002 saw the publication of two large atlases with contributions from GEUS. A petroleum geological heavyweight in a class by itself: The Millennium Atlas – Petroleum Geology of the Central and

# BUT D KICKING

Northern North Sea, and: The Neogene Stratigraphy of the Glaciated European Margin from Lofoten to Porcupine. The following year, GEUS published the comprehensive book: The Jurassic of Denmark and Greenland.

At present, GEUS is leading the NAG-Tec project: North-east Atlantic Geoscience – Tectonostratigraphic Atlas together with several other Geological Surveys. The aim of the project is to produce a new tectonostratigraphic atlas of the North Atlantic region from the Bight Fracture to Svalbard and the western Barents margin, including the continental margin areas of Greenland, Norway, the UK and Ireland.

In the years to come, GEUS will continue its oil and gas research to deliver knowledge and data to enable authorities to plan appropriately and establish a foundation to attract industrial investments for new exploration and enhanced recovery.

In mature oil regions like the Central Graben in the North Sea, GEUS will work on models for how it will be possible to exploit efficiently an ever larger proportion of the known resources in existing fields, and contribute with easily accessible data and new knowledge about the possibilities for new oil and gas discoveries in deeper layers of the subsoil.

In frontier areas like Baffin Bay and North-East Greenland, where only preliminary oil exploration without drilling has taken place so far, GEUS will combine broad research efforts within sedimentology, stratigraphy and geochemistry with geophysical interpretation.

“Energy production of both conventional oil and gas resources and renewables is vital for the Danish Society. In the decades to come, there is a strong need for research, advice to authorities and industry, and recruitment and training of dedicated personnel. GEUS is looking forward to play a key role in this process,” says deputy director Flemming Getreuer Christiansen, from GEUS. ◀



GEUS lightweight drilling rig in North Greenland. Photo: J. Laurrup, GEUS

## STEVNS KLINT

### FIELD SEMINAR ON CHALK RESERVOIR

A field visit will be held to see the reservoir chalk analogues at Stevns Klint on Tuesday 28th May, in a joint SPE-GEUS endeavour. The program will take us past the outcrops on Højerup beach (succession, tracefossil exercise, discussion of petrophysical parameters), a visit to the iridium-mine (with the KT boundary), Lunch & coffee at Rødvig Kro, and finally a visit to the Sigerslev chalk quarry (clean chalk, trace fossils, fracture systems).

“Pick-up” will be at 09:00 in Copenhagen Centre and “departure” at 16:30 return trip to Copenhagen, ETA 18:00

**Price: 1000 DKK for SPE members / 300 DKK for student members.**

The limit is 40 participants so sign up quickly! An e-mail with further details will be sent to all members. Deadline for submit is Friday 17th May.





# SPE SUMMER PARTY 14 June 2013

It's that time of year again, where we can begin to look forward to the SPE Summer Party.

Invitations will be sent out soon, but in the meantime, do reserve this date for an evening of wining and dining!

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## PROGRAMME

17:00 - 18:00

Drinks

18:00 - 19:00

PRESENTATION AND  
SPE ANNUAL GENERAL MEETING

19:00 - 21:00

Dinner

## LOCATION

GEUS

Øster Voldgade 10

1350 København K

## SPEAKER

Henrik I Petersen, GEUS  
(Maersk Oil from May 2013)

## TOPIC

Source rock potential in Denmark

## ENTRANCE FEE

None

## REGISTRATION

Please indicate your attendance  
by Thursday 9 May  
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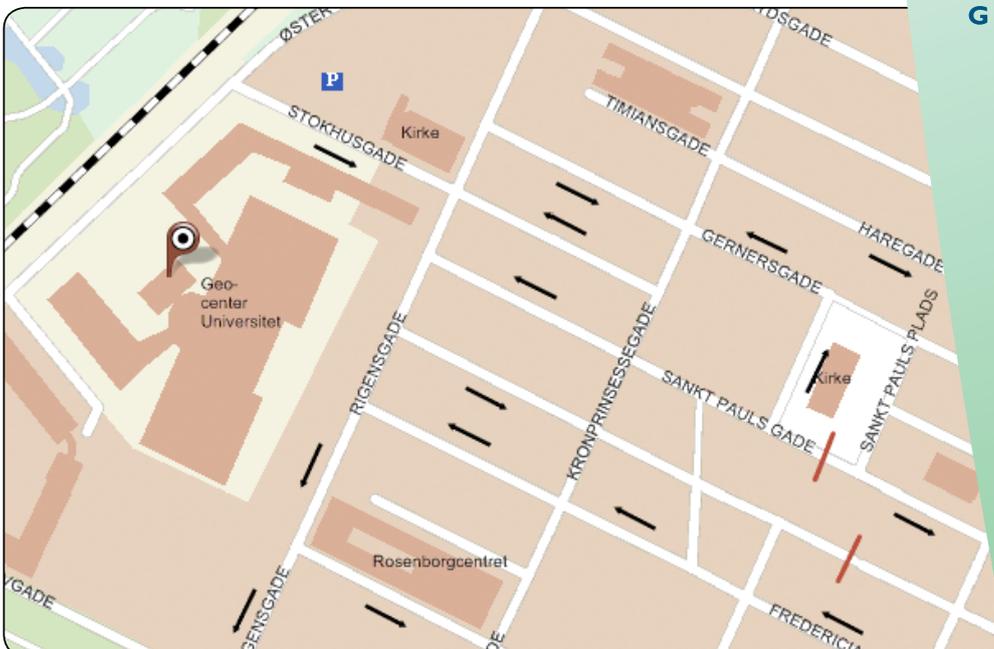
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