



PGK

Petroleum Geologische Kring

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Venue:	PGK's monthly meetings are held at the KIVI building, Prinsessegracht 23, Den Haag. Drinks are served from 17:00 hrs; the lecture starts at 18:00hrs.		www.pgknet.nl twitter @PGKring
Membership:	Apply for membership through the PGK website. The annual fee is €15.-		
Accounts:	ABN/AMRO Bank: NL14ABNA0886582733 (PGK, Den Haag)		

MAY 2014 NEWSLETTER

MEMBERSHIP DUES

Please remember to pay your 2014 membership dues of €15 to the following bank account: NL14ABNA0886582733, PGK, Den Haag. Please make sure to mention your "name" and "PGK fee 2014" in the subject.

MAY 8-11TH, 2014: SPRING PGK FIELD TRIP (BOULONNAIS-FRANCE)

Theme: "Dynamics of Cenozoic inversion of Upper Jurassic deposits in terms of structural geology, source rocks, syn-rift fluids, sedimentology and sequence stratigraphy"

This PGK Day Trip will start on Thursday 8 May 2014.

Registration is closed now and participants have already received the final information.

MAY 21ST, 2014: PGK MEETING-KNGMG ANNUAL MEETING

This monthly PGK meeting will be combined with the KNGMG AFM and will be on Wednesday, May 21st at the KIVI building, Prinsessegracht 23, Den Haag. 2 PhD students will give lectures on the following topics:

Lecture by Kevin Bisdom: **3D outcrop models – the key to increased recovery from naturally fractured reservoirs?** and Luuk Kleipool: **A digitalised Miocene carbonate body and its synthetic seismic expression**

The agenda will be:

15:30-16:00 social hour
16:00-17:00 KNGMG AGM
17:00-18:00 social hour
18:00-19:00 PGK lectures



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10TH JUNE 2014

One of our sponsors, Global Pacific & Partners International, is hosting the PetroEuropa Club Coctail in the Hague on June 10th.

There will be an interesting talk on "*Iran's oil and gas industry investment landscape, Europe's 'new' gas dilemma, and potential impact on gas supply and Russia*" by **Bijan Khajepour**.

Venue: Des Indes Hotel, Lange Voorhout 54-56 · 2514 EG The Hague

If you are interested, please register by sending an e-mail with your contact info to: brigitt@glopac-partners.com

16-19JUNE, 2014: 76TH EAGE CONFERENCE & EXHIBITION 2014

PGK will be there. Come and meet us!

23RD JUNE, 2014: ANNUAL JOINT PGK-SPE BARBEQUE 2014

The annual joint PGK-SPE barbeque will take place in Carlton Beach Hotel. More info about the registration and the details of the event to be announced soon.

EXCURSIONS 2014

Mark your calendars now for the following events:

- PGK September Field Trip: Jurassic Coast of South England, **25-28 September 2014**, guide Harry Doust. Find more information about the objectives of this trip in our website.

Registration will open soon.

NEW MEMBERS

Applications for membership have been received from Jhonatan Dany Valdiviano Huertas (Wintershall), Richard Wessels, Abdelrahman Elkhateeb (Dana), Lars Noorbergen (VU Amsterdam), Nienke Ansems (IGRAC). If no objections are received prior to or during the next meeting, they will be admitted as member of our society.

Also, we encourage our members to become members of our umbrella organisation, **KNGMG**. You can check more info here: <http://www.kngmg.nl>

WEBSITE

The link to our website is www.pgknet.nl. Check there for the latest news on meetings, events, excursions, jobs, membership. If you come across interesting websites that may be of use to other members of the PGK, please send the URL to the web master (gijs.straathof@sgs.com), who will share them on the PGK website.

TWITTER

We are now on Twitter @PGKring. The account shall be used to announce events, send reminders for events and occasionally to re-tweet interesting items. So follow us on twitter!

LINKED-IN

We also have a group on linked-in (called PGK), that our members may join. Any member of the group is free to list subjects there. Requests to the secretary for linked-in contacts will be ignored, as the secretary function does not have a linked-in account.

**PROGRAM PGK MEETING WEDNESDAY MAY 21ST , 2014****Address:** KIVI building, Prinsessegracht 23, Den Haag.*Kevin Bisdom***3D outcrop models – the key to increased recovery from naturally fractured reservoirs?***K. Bisdom (TU Delft), Prof. Dr. G. Bertotti (TU Delft, VU Amsterdam)*

The search for new hydrocarbon reservoirs and the need to enhance recovery from existing reservoirs require concerted action of geologists, geophysicists and engineers. Through improved predictive modelling, the Applied Geology section at TU Delft aims to increase the geological knowledge of the subsurface to enhance hydrocarbon production. The high-resolution subsurface models that are built by this group, are often based on and conditioned to quantitative outcrop analogue data. Quantitative in this sense means large datasets with accurate, preferably georeferenced, objects. Acquiring these datasets in short timeframes requires the use and development of novel tools.

Naturally fractured reservoirs are one group of complex reservoirs that have a large potential for increased recovery, if the impact of fracture networks on fluid flow can be better understood. However, subsurface characterization of natural fractures is often hampered by a lack of high-resolution data. Outcropping analogues can provide a better understanding of these reservoirs, but the highly heterogeneous behavior of natural fracture networks requires large, multi-scale and highly accurate outcropping fracture datasets.

The reality is, however, that many structural geologists still measure fractures in the field by means of a measuring tape, leading to undersized and incomplete fracture datasets, which are unsuitable for input into 3D fractured reservoir models. In recent years, we have been developing tools to acquire large 2D fracture datasets, and we are currently extending this to 3D data acquisition, making use of a drone (the GeoBee, featured in the March '14 issue of the Geo.brief) and photogrammetry techniques. Using these tools, we acquire unique outcropping fracture datasets that provide new insights into the development of natural fracture systems.

Currently, we apply these tools to study the fracture patterns in an outcropping fold in central Tunisia, which is an analogue to nearby subsurface fractured carbonate reservoirs. Rather than only describing the fracture patterns, we combine our quantitative dataset with multi-scale mechanical stress/strain models to gain a better understanding of when and where fractures were formed in relation to the regional shortening and folding.

We identify three main fracture systems, two of which are pre-folding, having been formed during shortening at depths up to 1000 m, and the third system is related to folding. In terms of fluid flow, the pre-folding fractures are likely to have the biggest impact, due to their relatively large size and aperture. We derive size, spacing and orientation distributions from these fracture patterns to build fold-scale 3D fracture network models that form the basis for reservoir models and fluid flow analysis.



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Luuk Kleipool:

A digitalized Miocene carbonate body and its synthetic seismic expression (Las Negras, Southern Spain)

Over the last decade the resolution of satellite images and the accuracy of GPS-data increased significantly. In this study digital outcrop models (DOM's) and GPS tracks are used to digitalize the major sequence boundaries of a Miocene carbonate platform in the Cabo da Gata area (Southern Spain). In addition, a comprehensive petrophysical analysis was performed on plug-samples derived from the same outcrop covering the entire facies spectrum. The obtained density, porosity and velocity data are assigned to the volumes enclosed by two digitalized sequence boundaries in the DOM. Digitally picked cross-sections show the internal structure and petrophysical distribution of the sedimentary units and their corresponding facies. Further calculations on the petrophysical data are used to create an acoustic impedance model that can be translated to synthetic seismic sections of the outcrop.

The following companies are warmly thanked for sponsoring the PGK:

Argo Geological Consultants - Baker Hughes Reservoir Software

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