PETROLEUM GEOLOGISCHE KRING

KONINKLIJK NEDERLANDS GEOLOGISCH MIJNBOUWKUNDIG GENOOTSCHAP

PGK

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Venue:	PGK's monthly lectures are held at the KIvI building, Prinsessegracht 23, Den Haag. Drinks are served from 5 PM; the lecture starts at 6 PM.		**www.pgknet.nl**
Membership:	Apply for membership by contacting the secretariat. Euro 15,-		
Accounts:	Fortis Bank: 88 65 82 733 (PGK, Den Haag)		Postbank: 4074482 (PGK, Den Haag)

JUNE 2003 NEWSLETTER

18 JUNE: MONTHLY MEETING

The next PGK meeting will be on **Wednesday, 18 June**. As usual, social hour (free drinks) will be between 17:00 and 18:00 hrs. The lecture will be given by **Jon Noad** (Shell International), with the title:

"Field analogues: a single-faceted approach to 3-D Reservoir Modelling"

Please see other side of this newsletter for the lecture abstract.

SUMMER RECESS

In July and August there will be no PGK activities. The meeting of June the 18th is the last activity before the start of the summer. The first activity after the summer recess will be the one day excursion on the 13th of September. The first meeting of the autumn will be on September the 17th.

OTHER PGK ACTIVITIES

3 DAYS EXCURSION

13-15 june: PGK spring excursion to the Saar-Nahe basin

The PGK Spring excursion 2003 will take place very soon. Friday 13th of June we will depart for the ***Saar-Nahe basin***. As mentioned in previous announcements, the scientific program of the Saturday and the Sunday is organised by professor A.Schäfer from the University of Bonn.

On Friday afternoon we will visit the "UNESCO world heritage site" Völklinger Hütte. This a historic iron work which was deserted only two decades. The excursion fee is now set on the special PGK anniversary price of only **EUR 200,-**

There are only 4 seats left. Please register soon by E-mail to: h.mijnlieff@nitg.tno.nl

ONE DAY EXCURSION

The one day excursion will be a joint activity with "de Sedimentologische Kring". We will visit Texel island looking at channel dynamics, recent growth of aeolian dunes as well as measures mankind invents to protect the coast from too severe erosion. Albert Oost from the RIKZ, will be our guide. The excursion will take place on Saturday 13th of September. Departure will be early to catch a boat from Den Helder. Details of the excursion such as place, timing and costs are still under discussion. Nevertheless you can already apply by sending an E-mail to h.mijnlieff@nitg.tno.nl

NEW MEMBERS

Applications for membership have been received from Ymke van den Berg (NITG-TNO) and Robert Aalpol (Gas de France). If no objections are received prior or during the next meeting, they are automatically admitted as members of our society.

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Monthly meeting: **Wednesday 18 June 2003**
Address: KIvI building, Prinsessegracht 23, Den Haag
Social hour: (free drinks) between 17:00 and 18:00 hrs
Lecture: at 18:00hrs

Field analogues: a single-faceted approach to 3-D Reservoir Modelling

Jon Noad, Shell International, Rijswijk, Netherlands

In selecting analogues to prospective hydrocarbon reservoirs, there is a paradox in that, in order to select an appropriate analogue reservoir, the production geologist needs to have a clear idea of the structural, stratigraphic and sedimentological setting, together with some idea of how the reservoir flow units are connected and the three dimensional distribution of rock properties. If all of this data is available, one might question the need for an analogue in the first place. In addition an analogue dataset is unlikely to fully represent the reservoirs being modelled, as no two reservoirs are identical.

Despite this, many examples exist where the appropriate use of field analogue data has made a considerable difference to the understanding, and consequently the development, of hydrocarbon fields in a variety of depositional settings. Most of these are analogues that display very similar depositional settings to those being modelled. In this presentation several examples are presented which address the limited application of analogues to field modelling. They demonstrate that one does NOT need a perfect analogue; instead a single aspect of the analogue may provide enough key data to constrain 3-dimensional modelling.

The first example of the use of field analogues was provided by studies on the Cambrian Athel Formation of the Al-Noor Field in southern Oman. The Athel comprises a 400 m thick microlaminated, chert reservoir, encased within the Ara Salt. When the depositional model did not provide a good history match, a potential analogue (the BIF's of the Pilbara, in NW Australia) was found to provide a probable diagenetic model, explaining the thick chert succession. However the BIFs had a different depositional setting, and a different fracture pattern, limiting their use as a structural analogue. This case demonstrates that a single aspect of an analogue may be utilised in isolation, in order to learn more about the reservoir, although overall the analogue was unsuitable.

Analogues have also been used in modelling reservoir properties in the Northern North Sea. The Rannoch Formation, part of the Brent succession in the Tern Field, is interpreted as having been deposited in a lower shoreface setting. The use of field analogue data, from the Cretaceous Book Cliffs of Utah, suggested a (successful) approach whereby lower shoreface deposits were subdivided into parasequences. Kriging of properties within each parasequence was used to delineate shales and sands, and hence reservoir distribution. However analogues chosen to model the overlying Lower Ness deposits indicated that a more lithostratigraphic approach would be far more successful. The modelling of these two Formations used contrasting stratigraphic approaches, based on their analogues, although those analogues did not have the same reservoir architecture or property distribution. Their use was limited to an approach to correlation, used to constrain property modeling.

A further example from the Asmari Formation of the Miocene of the Zagros Mountains in Iran confirms the potential utility of surface outcrops in constraining reservoir distribution. Fieldwork undertaken adjacent to the Gachsaran Oil Field enabled a detailed sequence stratigraphic framework to be erected, which was underpinned by data from the adjacent oil fields. This framework could then be applied in a predictive sense to assess the distribution of evaporites and prograding lowstand sand wedges across the western and southwestern Zagros.

Finally an example from the Cretaceous of Oman is presented to demonstrate that the integration of data, where available, can be used to improve the 3-D reservoir modelling of a field. Building on sedimentological studies from outcrop and core, the integration of high resolution seismic data has enabled the locations of individual channel belts to be ascertained. The Hazar field is located in the western Central Oman Basin, and produces from the Cretaceous Gharif Formation. Outcrop studies have been integrated with subsurface data to build up a picture of the changes in dominant fluvial style through the Middle and Upper Gharif Formation. These have then been used to decide on the size and orientation of the channel belts, and modelled to allow the STOIIP and production paths to be established.

Please post this page on the board of your office building. New members and guests welcome!