

PETROLEUM GEOLOGISCHE KRING

KONINKLIJK NEDERLANDS GEOLOGISCH EN 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.	Labels:	Last update March 2000.
Membership:	Please apply for membership by contacting the secretariat. Annual dues: Fl 30,-		
Accounts:	VS Bank: 88 65 82 733 (PGK, Den Haag)	Postbank: 4074482 (PGK, Den Haag)	

APRIL NEWSLETTER

APRIL 19TH:

Dr. Ronald van Balen from NITG-TNO Utrecht (Geo-Energy) will speak about:

MODELLING THE HYDROCARBON SYSTEMS OF THE WEST NETHERLANDS BASIN

The hydrocarbon system in the West Netherlands Basin was quantitatively modelled, using forward modelling of subsidence, heatflow, compaction and hydrocarbon generation and migration. Modelling was carried out on a 2-D cross-section through this basin, running approximately NNE-SSW. The major exploration objectives in the West Netherlands Basin are Lower Cretaceous, Upper Jurassic and Lower Triassic sandstones. The two generally accepted source rocks are Lower Jurassic (Posidonia) oil-prone marine shales and Westphalian gas-prone coals. However, based on gas geochemistry (NW European Gas Atlas) there are indications that marine basal Namurian source rocks could be a third important interval. In this quantitative modelling study the timing of generation, migration and accumulation of hydrocarbons of the three hydrocarbon systems are evaluated using the TemisPack modelling tool. The generation history depends to a large extent on the assumed history of heatflow in the basin. The history of heatflow can in general be constrained by thermal indicators such as vitrinite reflectance data. However, the inversion of thermal indicators can not be uniquely obtained; multiple thermal histories will result in the same present-day vitrinite reflectance. In our modelling approach, the history of heatflow is also constrained by the tectonic evolution of the basin. Forward modelling of tectonic subsidence based on a depth-dependent lithospheric stretching algorithm predicts the evolution of heatflow in the basin.

Forward modelling results of the Lower Jurassic oil system shows that the model reproduces known hydrocarbon accumulations in Lower Cretaceous reservoirs. An additional large sized accumulation is predicted at Den Haag. Based upon a published Base Aptian time map, a potential field is expected a few km's offshore. The Lower Cretaceous reservoirs were filled just after the Sub-Hercynian inversion. As a consequence, the observed biodegradation of oils must have taken place during the Early Tertiary. In the model results, the migration of the oils occurs through the Lower Jurassic claystones, via the dipping carrier sandstones of the Middle Werkendam Member, and finally through the claystone-dominated Schieland Group into the Lower Cretaceous reservoirs.

Results of the modelling of the Westphalian gas system show that larger-sized undiscovered reserves potentially exist in the southern part of the cross-section. Especially the predicted accumulation at Den Haag has a large areal size. We have however no insight into the 3-D structure of this potential field. In the northern part, accumulations are predicted at both the Triassic and Upper Permian levels, making these sites prospective despite the limited thickness of the reservoir horizons. According to the modelling results, the reservoirs were filled during the Late Jurassic-Early Cretaceous rifting phase. Generation of hydrocarbons started 90 million years earlier.

FORTHCOMING PGK EVENTS

May 17th: Effects of immense clastic sedimentation onto massive evaporites - the Upper Permian progradational system of the Pericaspian Basin. A lecture by Jürgen Marsky and Peter Gralla (Veba Oil and Gas).

! **Sunday May 21th**: One-day PGK excursion: **The geology of the Hague**. Please register quickly with our excursion secretary Mark Geluk (email: m.geluk@nitg.tno.nl) or by contacting the secretary.

September 2000 Fieldtrip to Utah and Colorado

Looking at magnificent geology in the USA to better understand the subsurface of the Netherlands? With 16 to 24 participants a 7 to 10-day fieldtrip to Utah and Colorado will cost fl. 3000-3500 (all inclusive; 21st September–1st October). If there is sufficient interest I am willing to run such a trip. The proposed fieldtrip is a modified version of a trip that I have run a number of times for staff from a major oil company. We will visit the geologists' paradise in the states of Utah and Colorado. Textbook examples of desert deposits, deltaic deposits, source rocks, salt diapirs and other assorted geological phenomena. All spectacularly exposed in the Book Cliffs and in national parks. Virtually all outcrops are easily reached by car or on foot (max. 30 minutes). Interested? Please send your name, postal address, email and telephone number together with a self addressed and stamped return envelope to W.J.E. van de Graaff, S.W. Churchillaan 1009 A, 2286 AD Rijswijk before April 21st. Those members who in 1998 indicated their interest in a Utah-Colorado trip will be sent the registration form directly.

Evert van de Graaff

OTHER EVENTS

Vijfde Nederlands Aardwetenschappelijk Congres (KNGMG/KNAW/NWO), 20-21 april 2000 te Veldhoven. Info: pia.teeuw@bureau.knaw.nl of 020-5510727.
Announcement: KNGMG Wadden Forum, 16 juni 2000.

MEMBERSHIP NEWS

Those members who have not yet made their **membership payment** of fl. 30,- for the year of 2000, are requested to do so this month.

We have received **applications for membership** from **Mr. A. van der Zanden** (Continental Netherlands Oil Company), **Mr. M. Nepveu** (NITG-TNO) and **Mr. R. van der Pal**. If no objections are received by the end of the next meeting they will be automatically elected members of the society.

*The following companies have already allocated sponsorship for 2000:
Hogeschool Rotterdam, sectie aardrijkskunde -TransCanada Int. (Netherlands) B.V.*

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The following companies are warmly thanked for sponsoring the PGK in 1999:

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