

# PETROLEUM GEOLOGISCHE KRING

KONINKLIJK NEDERLANDS GEOLOGISCH MIJNBOUWKUNDIG GENOOTSCHAP **PGK**



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<b>Venue:</b>	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.		<a href="http://www.pgknet.nl">www.pgknet.nl</a>
<b>Membership:</b>	Apply for membership by contacting the secretariat. The annual fee is €5.-		
<b>Accounts:</b>	Fortis Bank: 88.65.82.733 (PGK, Den Haag)		

## MARCH 2006 NEWSLETTER

### **16 MARCH: MONTHLY MEETING**

The next PGK meeting will be on Wednesday, March 15th, 2006. As usual, social hour (free drinks) will be from 17:00 to 18:00 hrs. The lecture will be given by Dr. Guido Bracco Gartner (Shell) on:

### **Obtaining Permeability from Seismic Data; A New Breakthrough in Carbonate Reservoir Modelling**

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

### **APRIL MEETING:**

The April meeting will be held on **Wednesday April 19<sup>th</sup>, 2006**. This is a combined KNGMG/PGK event. The programme will be as follows:

- 17:00-18:00 hrs: Social hour (free drinks)
- 18:00-18:45 hrs: KNGMG Annual Meeting
- 18:45-19:45 hrs: Lecture by **Harald Lichtenberg (De Groot-Bril)**

### **NEW MEMBERS**

Applications for memberships have been received from Angello Pagano van Amersfoort (Fugro Robertson) and Bas Steins (Fugro Robertson). If no objections are received prior to or during the next meeting, they are automatically admitted as members of our society.



**Monthly meeting:** Wednesday 15 February 2006  
**Address:** KIVI building, Prinsessegracht 23, Den Haag  
**Social hour:** (free drinks) between 17:00 and 18:00 hrs  
**Annual Meeting:** at 18:00 hrs  
**Lecture:** at 18:45 hrs

### **Obtaining Permeability from Seismic Data; A New Breakthrough in Carbonate Reservoir Modelling**

Dr. Guido Bracco Gartner (Shell)

#### **ABSTRACT**

Shell's Carbonate Team has been developing a method in which post-stack seismic can be used to estimate average interval matrix permeability in carbonates. The foundation of the technique is a new model, which describes quantitative relationships between sonic velocity, porosity and permeability. This model relates a pore geometry factor from the poro-elasticity theory with permeability from lab measurements. This pore geometry factor describes the 3D pore structure and can be extracted from inverted post-stack seismic data. Additionally, this factor relates to pore connectivity and, therefore, to permeability. After the concept was tested and successfully proven on plug scale, the first implementation focused on a large carbonate field in the Middle East. This reservoir has all the ingredients to perform a full field test of the concept - good thickness for multiple seismic reflections, matrix-dominated permeability, single mineralogy (calcite), superb seismic data and enough wells with good compressional and shear sonic logs. Introducing pore structures in the characterisation of carbonate reservoirs from acoustic data helps resolve the ambiguity in porosity/permeability prediction. In this field example we have demonstrated that: 1) the new rock property prediction is much more accurate than properties predicted by commercial inversion packages, 2) pore structure can be extracted from 3-D post-stack seismic, 3) a permeability indicator can be estimated from inverted seismic, and 4) a permeability indicator volume proved to produce a superior history match against a permeability model constructed from extensive well data.

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