

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 October 11th, 1999
Membership: Please apply for membership by contacting the secretariat. Membership dues for 1998/1999: Fl 30,- Membership dues for 1997 and previous years: Fl 25,-	
Accounts: VSB Bank: 88 65 82 733 (PGK, Den Haag)	Postbank: 4074482 (PGK, Den Haag)

OCTOBER 1999 NEWSLETTER

PGK OCTOBER MEETING

The theme of the PGK meeting of **Wednesday October 20th** will be 4D- or time lapse seismics. Rob Staples from Shell Rijswijk (SEPTAR) will discuss its application on one of Shell's reservoirs. Professor Jacob T. Fokkema, TU Delft will review 1) time-lapse image formation, 2) the relationship of the observed change in the time-lapse image with the corresponding change in the geological reality, 3) how the gas production in the Netherlands leads to a different seismic image of the reservoir.

He provided the following abstract:

In essence the four-dimensional (4D) measurement encompasses the activity which is concerned with a geophysical measurement that is repeated in time in the *same* three-dimensional (3D) configuration. The four dimensions have a clear physical connotation. The first two dimensions are related to the spatial surface coverage of the experiment. The third dimension is related to the recording time of one measurement and is later on in the image formation transferred to the depth dimension. The fourth dimension indicates the time instant of the repetition of the measurement with the same 3D coverage. It is clear that the sampling in the repetition dimension has to be larger than the duration of the experiment. Although this approach is useful for all geophysical measurements in this lecture I restrict myself to the seismics. In the case of a seismic survey the number of instants on the repetition axis will be sparse due to economic reasons. Then it is more appropriate to speak of a "time-lapse" measurement. The sampling rates of the common 3D measurement are chosen such that the 3D *heterogeneity* is sufficiently captured. The repetition interval has to be chosen that the localized *change* of the 3D heterogeneity is sufficiently captured.

In the realm of time-lapse seismics we distinguish three problem areas:

- The repetition constraints of the experiment in the 3D configuration. If these conditions are not met we encounter the problem that the time-lapse image is unreliable due to this non-repeatability issue.
- The time-lapse image formation.
- The relationship of the observed change in the time-lapse image with the corresponding change in the geological reality.

DIGITAL PGK NEWSLETTER

Approaching the next millennium a lot of PGK members receive their PGK newsletter digitally. The digital newsletter is usually sent at an earlier date than the printed newsletter. Those of you who also wish to receive a newsletter by e-mail, please pass on your e-mail address to the PGK secretariat (M.Kusters@siep.shell.com). Can you please also indicate

whether a digital newsletter copy would be sufficient? The PGK prefers sending newsletters by e-mail only in order to reduce mailing costs and manpower efforts.

AUTUMN FIELD SEMINAR



26 People participated in the autumn field seminar to the Rotliegend and Zechstein of the Harz and Eastern Germany. Introduction to the area and outcrops was given by PGK board members Mark Geluk and Mieke Kusters. Weather conditions were excellent most of the time, although the youngest participant protested loudly against the high temperatures on Friday. Rotliegend aeolian dunes, sabkha, playa and fluvial sediments as well as Zechstein 1 (debris) reefs and slope anhydrites could be studied to taste (photo courtesy Jan Steinz).

OTHER FORTHCOMING PGK EVENTS

November 17 Combined PGK/DPS lecture: Kees Geel, TUDelft, Enhanced log results through geological input: Evaluating thin bedded turbidite sequences.

MEMBER NEWS

We have received applications for membership from **T. Kortekaas** (SEPTAR) **Mr. H. Dudok van Heel** (student Utrecht University) and **Mr. K van Ojik** (Argo Geological Consultants). If no objections are received by the end of the next meeting they will be automatically elected members of the society.

The following companies are warmly thanked for sponsoring the PGK in 1999:
Amoco Netherlands B.V.- Argo Geological Consultants -
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