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. Annual dues: Fl 30,- (2002: Euro 15,-)		
Accounts:	VSB Bank: 88 65 82 733 (PGK, Haarlem)		Postbank: 4074482 (PGK, Haarlem)

OCTOBER NEWSLETTER

17 OCTOBER: MONTHLY MEETING

The October meeting will be held on Wednesday 17th From 17:00 hrs drinks will be served. At 18:00 hrs Dr. Djin Nio from ENRES International will giving a lecture with the title: **"CHARACTERIZATION OF FLUVIAL RESERVOIRS – REVISITED"**

Abstract- Fluvial depositional environments and facies have been a popular subject of study among the sedimentary geologists and a very large number of publications appeared during the last decade. At the same time, fluvial reservoirs are one of the most important hydrocarbon-bearing units in the subsurface. Several giant oil and gas fields consist of fluvial reservoirs, e.g. the Statfjord Field, the Sadlerochit Group in the Alaskan North Slope, the Groningen Field. It is remarkable that the geological heterogeneity of fluvial reservoirs is able to trap an estimated 40% of movable oil reserves (Tyler and Finley, 1991). At the same time, we all know that fluvial reservoirs have low recovery efficiency (25%-40% of oil in place), depending on the degree of reservoir complexity (Barwis et al., 1990, Tyler and Finley, 1991).

It was because of these circumstances that a better understanding of the fluvial depositional facies and more specifically the subsurface fluvial stratigraphy was needed.

The study of fluvial systems can be put into two main perspectives – the sedimentological and the stratigraphic approach. Sedimentologists carried out most of the studies during the last decades, which have contributed into a comprehensive process-related understanding of the different fluvial systems. The development of the present-day sedimentological concepts of fluvial systems had an important turning point during the 1977 Calgary meeting on fluvial sedimentology. During this meeting a number of important aspects of fluvial facies were presented in a systematic way. Most of the studies were based on the comparison of modern fluvial systems and their ancient analogues, and discussed aspects of fluvial morphology, sediment dynamics, facies studies and palaeohydraulics. An important next step was made in the 80's where an effort was made to define predictive stratigraphic parameters that can be applied in the subsurface correlation of fluvial reservoirs. The important trends in research relevant for the characterization of fluvial reservoirs are the recognition of fluvial styles from vertical logs, the definition of fluvial architectural elements and the bounding-surface concept in fluvial architecture. In the 90's an attempt was made to develop sequence stratigraphic concepts in fluvial depositional systems. Furthermore, extensive forward and reverse modelling of fluvial systems and reservoir simulations became more common.

Despite this large number of studies, many problems and questions still exist in the prediction of characteristics of fluvial reservoirs. We still do not understand sufficiently subsurface fluvial stratigraphy. One of the reasons is that most studies were carried out within the sedimentological perspective and a lot less in the stratigraphic perspective. The attempt to establish a sequence stratigraphic concept for fluvial systems was mostly done from the sedimentological perspective. The sedimentological perspective is very strong in process-related analysis and does mostly not include the geological time dimension. The

stratigraphic perspective works mainly with geological time, but does not consider fluvial facies variability in time and space. Near-synchronous subsurface correlation of alluvial-fluvial sediment successions is a very important part in the characterization of fluvial reservoirs. The sedimentological perspective is because of its mainly process-related approach not suitable for this exercise. At the same time alluvial-fluvial facies successions commonly are barren sequences and will put a constraint to the stratigraphic perspective.

To obtain a better understanding in subsurface fluvial stratigraphy and define parameters for reservoir prediction, a specific form of integration ("hybrid form" and not only integration) of sedimentology and stratigraphy is needed. The new advances in sequence stratigraphy may bring us the possibility to carry out such a research. Based on the fundamentals of sequence stratigraphy, a new concept is emerging which deals basically with climate-forced, latitude-related sediment flux patterns. Since this approach is using periodic climatic changes as the master control in sediment flux and depositional facies variation, it is applicable at any place of the earth surface. The new concept takes into account the spatial fluvial facies variability as well as the relative geological time (t). It also recognizes near-synchronous "master" surfaces, which can be recognized in outcrop as well as in the log data from the subsurface.

Some examples from the subsurface and their outcrop analogues will be shown during the presentation.

OTHER PGK EVENTS

13 October

BIESBOSCH EXCURSION – Registration closed!

For info: see **www.pgknet.nl** or contact Eef Breman (breman@tierralinda.demon.nl; 071-5414171)

21 November

The annual joint PGK/DPS meeting has been postponed: it will be held in April. For details on the November lecture, please refer to www.pgknet.nl.

MEMBERSHIP

Applications for membership have been received from W. Zempolich (Agip KCO) and from D. Adelmann (PanTerra). If no objections are received by the end of the next meeting they will automatically become members of the PGK.