

PETROLEUM GEOLOGISCHE KRING

KONINKLIJK NEDERLANDS GEOLOGISCH MINBOUWKUNDIG GENOOTSCHAP



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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
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MARCH NEWSLETTER

NEW BOARD MEMBERS

During the annual meeting of last month the following new board members were installed: Prof. Stefan Luthi (TU Delft; vice-chairman), Alessandra Giacometti (PanTerra; secretary) and Marco van der Meulen (Clyde; treasurer). With Berend Scheffers (TNO-NITG; chairman) they form the board of 2002.

20 MARCH: MEETING

The next monthly meeting will be on Wednesday 20 March (17:00 hrs). A lecture will be given by Henk Pagnier and Frank van Bergen (TNO-NITG*) with the title:

“Enhanced coalbed methane production with CO₂ sequestration, a potential clean fossil energy source for The Netherlands?”

ABSTRACT - The subsurface can help in the worldwide struggle for emission reductions of the greenhouse gas CO₂, both as a source for alternative energy, for more efficient use of fossil fuels, and as a storage medium for produced CO₂. Most subsurface solutions, including ECBM, are currently not cost-efficient, but are likely to become commercial in the future as a result of future developments and measures by the international community to reduce CO₂ emissions. Especially, the option of Enhanced Coalbed Methane production with simultaneous CO₂ sequestration is considered promising for many areas throughout the world, since there are still large coal reserves and ECBM has potential for “zero-emission” energy production. TNO-NITG has executed a study* committed by the Dutch Government to assess the potential of combined ECBM production and CO₂ disposal in coalbeds (< 1500 m) in the subsurface of the Netherlands. The main goal of the study is to identify regions that are most suitable for ECBM with CO₂ storage with respect to reservoir volume and gas content (both the CO₂ storage capacity and the in-situ CH₄ content).

The in-situ CH₄ content of the coal depends mainly on pressure and temperature, which are both a function of depth, of coal characteristics (i.e. maturity, moisture content, composition) and also of the burial history of the coal bearing strata. The coal basins in the Netherlands underwent alternating subsidence and inversion, which could result in undersaturation of the coals in certain regions. Adsorption experiments were carried out on Dutch coal samples with pure CO₂, pure CH₄, and mixtures. Results show that the adsorption of pure CO₂ is about twice as high as the adsorption of pure CH₄ up to a pressure of 60-80 bars, which is approximately equivalent to a hydrostatic pressure at 600 to 800 m depth. At higher pressures, or greater depths, the gaseous CO₂ changes to supercritical CO₂. The adsorption capacity for this supercritical CO₂ indicates that the ratio between produced CH₄ and stored CO₂ can be significantly higher than 1:2.

The dependency on and the sensitivity of the gas content for the parameters is investigated to give a reliable estimation with quantified uncertainties of the gas content of the coal. The uncertainty calculations were done by Monte Carlo simulation analysis.

The Zuid-Limburg area has the highest estimated (producibile) methane content per km², thus the highest estimated storage potential per km² for CO₂. Considering the total available surface per area, the Achterhoek area has the highest estimated potential for (producibile) methane contents, and thus the highest estimated total storage potential for CO₂. However, the uncertainties in this latter area are also the highest. This result implies that the Zuid-Limburg area is probably the best location for a test site, whereas the Achterhoek area has the highest potential for large scale CO₂ sequestration. However, the choice of an area for a test site will also strongly depend on several local parameters, which are not considered within the scope of this study. A validation of the results can only be executed with a conditioned test site. It will be impossible to exploit all investigated areas, but the amounts of CO₂ that can be stored with ECBM could be sufficient to play an important role to reduce future growth (~ 1% or 2 Mt per year) of CO₂ emissions in the Netherlands.

An economical evaluation indicated, in the Dutch situation, the drilling costs to be the dominant cost factor. Based on the evaluation of several scenarios it was concluded that ECBM-CO₂ could be economically feasible in the Netherlands on relatively short term. In the future, economics could be improved by reduction of CO₂ capturing costs by flue gas injection and/or by a reduction of drilling costs.

In November 2001 the RECOPOL project has started which aims at the development of the first European field demonstration of CO₂ sequestration in subsurface coal seams. This pilot field test and the preceding research will deliver a firm understanding of this process under European conditions, and its potential for CO₂ reductions in Europe. For the location of the field experiment a suitable site was selected in the Silesian Basin in Poland, which ranked first in Europe as a potential sequestration basin (IEA, 1998). The chosen site has favorable reservoir properties (depth, permeability, gas content, etc.) and an already existing infrastructure. Only one new (injection) well will be drilled. Drilling and installation of the injection well is scheduled in the beginning of 2003, followed by 18 months of actual injection and production.

The research, design, construction and operation within the RECOPOL project will be executed by an international consortium, including IEA-GHG and research institutes, universities and companies from the Netherlands (TNO-NITG and Delft University of Technology), Poland (Central Mining Institute), Germany (DBI-GUT and Aachen University of Technology), France (IFP, Gaz de France and GAZONOR), Australia (CSIRO), and U.S.A. (Advanced Resources International). In addition, an international End-User group is now being formed. The RECOPOL project is funded by the European Commission and overall co-ordination of the project is done by TNO-NITG.

* This study is part of a joined project by TNO-NITG, Utrecht University, Delft University of Technology, and ECN. Overall coordination of the project is in the hands of the Netherlands agency for energy and the environment (Novem).

April 17th: Joint DPS-PGK meeting

“A new borehole-imaging tool for oil-based mud” by Andrew Hayman and Philip Cheung, (Schlumberger, Clamart).

Excursion: the Dogger and Malm of the southeastern Paris Basin

The annual field trip will be run from Friday 7 June until Sunday 9 June (revised dates). More details in February newsletter or www.pgknet.nl **Register.....** with Evert Breman, excursion secretary. Email: e.breman@tierralinda.demon.nl or by phone: 0252-544779 (evening).

MEMBERSHIP

Those e-mail members that haven't received an 'acceptgirokaart' are requested to email their correct mailing address to secretary@pgknet.nl. The following people apply for membership: J.G. van der Weide, W. Fisher (AgipKCO) and A. Duzan & F. Chevalier (TotalFinaElf).

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