



## NEWSLETTER March 2007

February was enlightened by Adrian Adeniran from Inteq and our resident VP Dialog & publication Iain Hillier who talked to us on depth “evaluation” in LWD and wireline environments at the last LPS Evening Meeting

The LPS membership stands at 60 (bravo Assia) but **Are you a LPS member?** If not, contact as soon as possible Assia with your renewal or joining fees. (Membership form attached).

Coming up:

Next week on the 8<sup>th</sup> of March we have the long awaited seminar on Reservoir Modelling Seminar (Details by our VP newsletter).

On the 22<sup>nd</sup> of March Dr. David Potter Anadarko Senior Lecturer in Petrophysics and Formation Evaluation at Heriot-Watt University will be getting *magnetically susceptible* through a *Rapid, Non-Destructive, Complementary Technique for Improved Petrophysical Appraisals* (abstract attached).

On the 19<sup>th</sup> of April Christian Bucker of RWE-DEA will reveal some hot topics on Geothermal Petrophysics (*Feasibility of Geothermal Power Generation in the German Upper Rhine Graben. An Analysis of the Geological and Petrophysical Conditions*)

We are looking for presenters for our May and June evening talks. So if any of you wishes to share a Petrophysical interesting topic with the fellow of the LPS please contact Kirril ([kirill.shmyglia@exxonmobil.com](mailto:kirill.shmyglia@exxonmobil.com))

Towards the end of June we plan a re-make of the “Immersive Visualization” now dubbed the Viz2 seminar.

Finally there is a stronger and stronger rumour that our website is going to re-launch imminently with a new look through a new provider (Thanks to Iain Hillier for spending lately so much on this). Try it soon: [www.lps.org.uk](http://www.lps.org.uk)

**Patrick Crossouard LPS President**



The next evening meeting will be on 22<sup>nd</sup> March. Please see the abstract for the presentation for the meeting below;

## **Magnetic Susceptibility – A Rapid, Non-Destructive, Complementary Technique for Improved Petrophysical Appraisals**

**Dr. David K. Potter**

**Anadarko Senior Lecturer in Petrophysics and Formation Evaluation,**

**Heriot-Watt University, Edinburgh EH14 4AS**

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Magnetic measurements provide a rapid, cheap and non-destructive means of characterising high resolution mineralogical variations between core samples. Until now they have been a relatively unexploited tool in petrophysical core analysis. One of the most useful measurements is low field (initial) magnetic susceptibility. This talk will show how such core measurements, both the raw results and novel processing of the results to mineral contents, can provide rapid predictions of key petrophysical parameters (in particular clay content and permeability). The measurements allow “quick look” petrophysical appraisals to be made long before the usual routine or special core analysis data becomes available. The negative or positive sign of the raw magnetic susceptibility signal is shown to strongly correspond to the main lithological and permeability zones. Moreover, the processed results have exhibited strong correlations between magnetically derived illite content and permeability in oilfields where the porosity-permeability relationship is very poor. Furthermore, the magnetic measurements have correlated with the flow zone indicator (FZI), the cation exchange capacity per unit pore volume ( $Q_v$ ), and the wireline gamma ray signal.

The relationship between magnetics and wireline gamma ray provides a quantitative means of distinguishing clean sand from muddy sand, even in the presence of a high gamma ray emitting (but low magnetic susceptibility) drilling mud. The measurements also allow the wireline gamma ray data to be related to illite content.

Recent work has also indicated that magnetic susceptibility measurements at higher fields are capable of producing even better results, by minimising the effects due to small amounts of any ferrimagnetic minerals present.



**From VP Newsletter;**

**Next Seminar - LPS Reservoir Modelling Seminar, 8th March**

The scope of this seminar will revolve around the petrophysical inputs to 3D Geocellular reservoir modelling, i.e. the determination, upscaling and distribution away from the wellbore of facies, porosity, saturation, permeability and the use of core and seismic data in conditioning these models. The seminar stems from an observation by many LPS members in conversations with board members that “ownership” of petrophysical data is often a cloudy issue in the multi-disciplinary environment that 3-D reservoir modelling engenders, and it is often a concern that there are many opportunities change the distribution of reservoir properties between the step up from wellbore to reservoir scale if one does not understand the mathematics of the (many) geo-statistical approaches available to the reservoir modeller.

We have presentations from software vendors such as Roxar and Schlumberger, consultancies such as Fugro-Jason and oil companies such as Shell and Statoil. For full details of the agenda please see the table below.

| <b>Time</b> | <b>Speaker</b>  | <b>Title</b>   | <b>Company</b> |
|-------------|---|--|----------------|
| 9.30        | Jonathan Lean   | Welcome  | LPS            |
| 9.45        | Ashley Francis  | Challenges of Property Modelling in 3D                     | Earthworks/SPE |
| 10.30       | Steve Cannon  | Modelling porosity and permeability from core and log data | Roxar          |
| 11.00       | COFFEE BREAK  |  |                |
| 11.30       | Colin Daly  | Geostatistics, properties and methods                      | Schlumberger   |
| 12.00       | Robert Webber   | Using seismic data to constrain porosity in the 3D domain  | Fugro-Jason    |
| 12.30       | Dan O’Meara   | Modelling water saturation – geostats or physics           | Halliburton    |
| 13.00       | LUNCH   |  |                |
| 14.00       | Bob Godfrey   | Seismic Porosity Modelling-Case Study                      | WesternGeco    |
| 14.30       | Alan Johnson  | Upscaling permeability                                     | Shell          |
| 15.00       | TEA   |  |                |
| 15.30       | Phil Ringrose   | Use of S-Bed for improved petrophysical modelling          | Statoil        |
| 16.30       | Mike Goldwater  | Upscaling; the engineers perspective                       | Auric Hydrates |
| 17.00       | Panel Discussion with Steve Cannon, Colin Daly, Jonathan Lean |  |                |
| 17.30       | Wine and Savouries  |  |                |



London Petrophysical Society  
One-Day Seminar

## “3D Modelling and Upscaling of Petrophysical Properties”

Thursday 8th March 2007 at the Geological Society, London

### Who Should Attend?

Petrophysicists, geologists, reservoir engineers, geophysicists, technical assistants, and support staff: all those who work with 3D static reservoir models, contribute to their inputs or use their outputs.

### Why?

3D geo-cellular modelling provides a powerful tool in understanding subsurface assets. In building representative models a host of inputs are required from across the disciplines of geoscience and engineering. Petrophysical parameters are a key component and there are many upscaling and distribution techniques available in populating models and as such much interaction between technical disciplines is required to accurate results for use in well planning, volumetrics and input to dynamic modelling for production profiles and reserves estimation.

### The technical program includes:

The basics of property modelling in 3D: upscaling and distributing petrophysical interpretations away from wells. The use of core and seismic data in conditioning the petrophysical model, including facies modelling. Operator case studies: porosity, permeability and saturation modelling in a variety of reservoir types. The engineering perspective: is the static model delivering fit-for-purpose models for subsequent dynamic modelling?

### Presentations by:

Earthworks, Roxar, Statoil, Schlumberger, Fugro-Jason, Halliburton, Shell, and others from the software, consultant and oil company communities.

Registration Cost: £125 for LPS/PESGB/AFES/SPE Members; £150 for Non-members. LPS is not VAT registered.

For further information e-mail: [rwebber@fugro-jason.com](mailto:rwebber@fugro-jason.com)

Dates for Your Diary



London Petrophysical Society  
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**2007**

|                        |                                       |                  |
|------------------------|---------------------------------------|------------------|
| 8 <sup>th</sup> March  | One Day Seminar – Reservoir Modelling | Burlington House |
| 22 <sup>nd</sup> March | 6pm Monthly Meeting                   | Burlington House |
| 19 <sup>th</sup> April | 6pm Monthly Meeting                   | Burlington House |