London Petrophysical Society
Registered Charity Number 1020083
A Chapter of SPWLA

NEWSLETTER August 2011

Message from the LPS President:

I hope you are all well and enjoying the excellent summer weather. Although as I type it is raining and today's SW looks very close to 1. Due to summer holidays the LPS takes a break in August from its programme of monthly meetings.

We reconvene on the 5th September with a presentation from Dr Peter Fitch of Imperial College on "Exploring heterogeneity in carbonate petrophysical properties, from recent sediments to subsurface reservoirs". I recently viewed a carbonate core in which permeability repeatedly varied by 4 orders of magnitude on a centimetre scale. I am looking forward to hearing Peter's thoughts on petrophysics in these types of rocks.

The agenda for our "Fluids in the reservoir: understanding capillary pressure and saturation height functions" seminar on Thursday 15th September is being finalised. So far we have confirmed talks covering capillary pressure theory, all the common saturation height function models, wettability, fluid contacts and case studies. This seminar is a must for any petrophysicists or engineers who need a concise introduction to the subject. A registration form is attached to this newsletter; please send to Peter Fitch, p.fitch@imperial.ac.uk.

Hope to see you soon at one of our events.

All the Best

Adam

Adam Moss: LPS President

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Dates for Your Diary

August Summer Break

Monday 5th September 2011, LPS Evening Meeting, Geological Society, London Piccadilly. 6.30pm.
Peter Fitch, Imperial College London.
Exploring heterogeneity in carbonate petrophysical properties: from recent sediments to subsurface reservoirs.

Thursday 15th September 2011, LPS One-Day Seminar, Geological Society, London Piccadilly.
Fluids in the Reservoir: Understanding Capillary Pressure and Saturation Height Functions.

Monday 3rd October 2011, LPS Evening Meeting, Geological Society, London Piccadilly. 6.30pm.
Gabriela Carrasquero, Fugro-Jason.
Rock Physics and Petrophysics Integration as part of a Seismic Reservoir Characterisation workflow. Case Study: Norwegian Barents Sea.

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Next Evening Talk:

Exploring heterogeneity in carbonate petrophysical properties: from recent sediments to subsurface reservoirs.

Peter Fitch – Imperial College London

Peter Fitch[1,2], Sarah Davies[2], Mike Lovell[2], & Louise Anderson[2]
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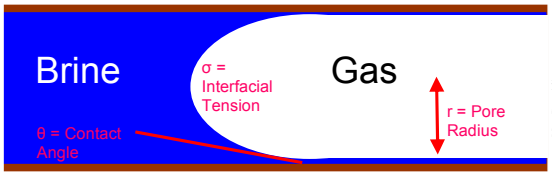
& [2] Department of Geology, University of Leicester, Leicester, United Kingdom..

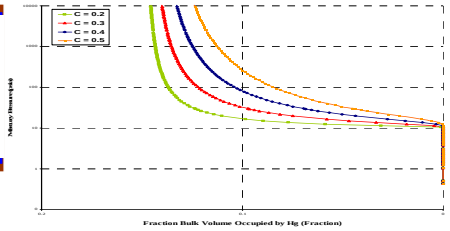
Understanding carbonate reservoirs can be challenging due to the intrinsic heterogeneities that occur at all scales of observation and measurement. Heterogeneity in carbonates can include variable lithology, chemistry/mineralogy, pore types, pore connectivity, and sedimentary facies. It is frequently stated that carbonate heterogeneities are poorly understood, although interestingly the term 'heterogeneity' is rarely defined or numerically quantified. This presentation discusses how heterogeneity can be defined and how we might quantify this term by describing a range of statistical approaches (e.g. coefficient of variation and the Lorenz coefficient).

These measures are applied to a subsurface reservoir to interpret variability in wireline log data; enabling a comparison of heterogeneities between different measurements and tools, and within individual or between multiple reservoir units. A Heterogeneity Log has been produced which identifies strong heterogeneity contrasts across a suite of logs, indicating an underlying geological control, for example meter-scale geological heterogeneities in carbonate facies and mud content. By applying the same statistical measures of heterogeneity to established flow zone units it is possible to rank these in terms of their internal heterogeneity. Increased reservoir quality correlates with both increased and decreased heterogeneity depending on the type of wireline measurement and can be related to underlying geological heterogeneities and measurement types.

In a second application of heterogeneity measures to physical property data we investigate Cenozoic sediments of the Equatorial Pacific, drilled during the Integrated Ocean Drilling Programme Expedition 320, with near continuous core recovery. The application of statistical techniques for the numerical quantification of heterogeneity to these data shows that the various discrete time periods (age units) studied along the transect return consistent values allowing these age units to be traced laterally based on contrasts in heterogeneity values. Physical property heterogeneities are seen to vary with unit thickness and can be related to lithology, and the presence / abundance of bioturbated intervals and carbonate turbidite beds. We also show how comparison of this heterogeneity across three levels of physical property measurement (wireline well log, continuous and discrete core measurements) can be used to investigate and constrain the effects of sampling frequency on interpreted heterogeneity.

Current work is suggesting the use of synthetic reservoir models will allow a more detailed understanding of the impact of heterogeneity on fluid flow in carbonate reservoirs, and these models will also provide a great tool for further testing and constraining controls on the application and interpretation of heterogeneity measures in petrophysical analysis.





London Petrophysical Society
A Formation Evaluation One-day Seminar

"Fluids in the Reservoir: Understanding Capillary Pressure and Saturation Height Functions"

Thursday 15th September at the Geological Society, London

Presentations On:

Capillary Pressure Theory
Lab Measurements of Capillary Pressure
Saturation Height Function Models
Free Water Levels and Contact Location
Wettability
Saturation Height Function Case Studies

Confirmed speakers from:
BG Group, CNR International, CoreLab, Gaffney Cline & Associates, RWE, Senergy, University of Leicester & independent consultants

Registration Cost:
£150 for LPS/PESGB/AFES/SPE Members
£175 for Non-members (LPS is not VAT registered)

For further information visit: http://www.lps.org.uk
or e-mail Peter Fitch: p.fitch@imperial.ac.uk

SPE YP London Summer Social Event

Dear SPE Young Professional:

If you would like to meet fellow SPE young professionals, make new contacts and expand your network this is your chance.

There are 600+ SPE young professionals in the London area and we are trying to bring a large group of us together next Thursday 25th of August, are you up for the challenge? **Spread the word**

When:
Thursday 25th August from 6PM onwards

Where:

5thVIEW

203-206 Piccadilly
London W1J 9LE

www.5thview.co.uk

Don't worry if you don't know anybody attending. We will be running several games and creating opportunities for you to meet other people so all you have to do is just make it to the bar.

Planned activities include:

- Ice-breaking drinks on the house
- **SPE**ed Dating – the best networking tool. Don't let the name of the game intimidate you, we have created an SPE version of it. You will be encouraged to talk to a new person every 5 minutes, find out what they do, who they are, who they work for and why not make a new friend!
- **Petro-Pub Quiz** – show your petro-knowledge and win a prize! We will be creating teams on the day but if you have a team please let us know so we can register you together.

Sponsored by: Oilfield Production Consultants (OPC) Ltd.

Spaces are limited: RSVP (yplondon@spemail.org) **to ensure you don't miss out!!**

Best regards,

SPE YP Committee (London Section)