

Gushor Inc. Newsletter



Heterogeneity – The Curse of the Oil Sands!

By: STEVE LARTER, CHIEF EXECUTIVE OFFICER – GUSHOR INC.

Everyone knows that reservoir heterogeneity has a big impact on recovery of heavy oil and bitumen and it is increasingly accepted that heterogeneity in fluid properties such as viscosity also impact a range of variables relevant to economic returns such as recovery factors, flow rates, SAGD startup times and cumulative steam oil ratios. Oil viscosity heterogeneity also impacts whether cold recovery or thermal recovery is necessary. Oil mobility is the ratio of reservoir permeability to oil viscosity at process conditions and while thermal recovery processes heat oil to drop the viscosity to a mobile state, the gradients in viscosity, both lateral and vertical do not completely disappear at steam temperature and this impacts where steam can be injected, impacting startup times, steam chamber continuity in SAGD mode and ultimately cSOR, cost and environmental impact. Getting the inter-well region to a similar low viscosity is crucial for an effective startup and thus lateral viscosity gradients need to be assessed. Baseline studies of fluid heterogeneity are very cost effective and can make the difference between marginal or epic economics.

Increasingly there is evidence that fluid heterogeneity and resource value is being coupled and it is important to remember that variable viscosity probably also means variable API gravity, variable sulfur content, behavior, and variable refining performance. Baseline studies cannot be overvalued!

It's not all bad news however; variable fluid composition also provides us with many tools that can help production including production allocation possibilities, ways of assessing barrier and baffle efficacy from fluid profiles and with varying fluid properties being ubiquitous. There may be unexpected sweet spots in even the most viscous parts of the oils sands. You just need to know what to look for.

For more information please contact us at info@gushor.com, or at www.gushor.com.

Gushor Inc. to Present for SPE in Santa Maria, CA

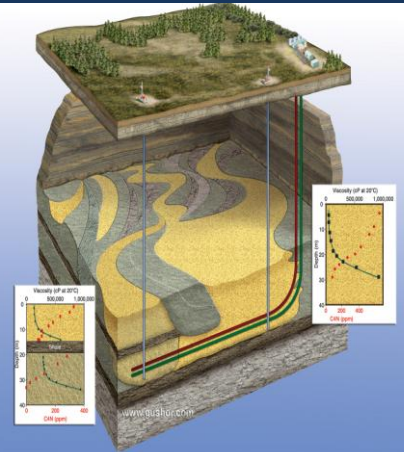
Gushor Inc. has been invited to speak at the monthly SPE luncheon in Santa Maria, California on May 10th, 2011. The topic to be discussed is **The Origin of Heavy Oil and Oil Sands Deposits – Learning from Alberta**.

This presentation will:

- 1) Discuss the origin of reservoir and reservoir fluid heterogeneities that are ubiquitous in heavy oil and tar sand reservoirs.
- 2) Present a critique on the methods employed for measuring physical properties of heavy oil and bitumen and the approach for accurate hydrocarbon composition from oils and solvent extracts from cores and cuttings.
- 3) We will also examine the need for baseline studies using fresh core samples, preferably at rig side to generate real time viscosity profiles. Rapid decisions whether to perform fluid production testing can be made while the rig is in place and logging tools are being recovered.
- 4) How to exploit the natural heterogeneities in fluid properties to assess reservoir continuity, barrier versus baffles, production allocation, and time lapse geochemistry.

If you wish to attend this event please contact Gayle Pratt at gaylepratt@sbcglobal.net, and for more information please visit www.gushor.com/industry_events.

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- Reduced Emission Recovery
- Carbon Management
- Biodegradation
- Fluid Mobility
- Heavy Oil Recovery

Gushor Education



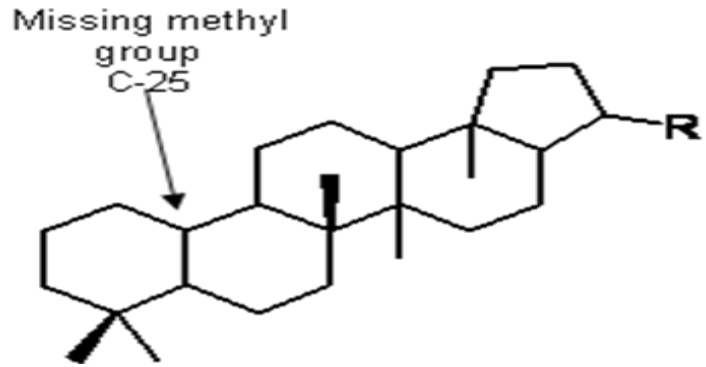


25 – Norhopanes Are Back in the Limelight!

BY: BARRY BENNETT, DIRECTOR OF GEOSCIENCES – GUSHOR INC.

Who would have thought it? 25-Norhopanes are back in the limelight. –And for many of you, why does it matter?

25 Norhopanes are microbially altered biomarker molecules sometimes found in oil sands reservoir bitumen's. Their origin has been controversial but they form from removal of a methyl group from a hopane and indicate very severe biodegradation. They are ideal trackers for production allocation studies or for some chemical viscosity assessment studies as they have very specific geographic and spatial distributions in many oil sands reservoirs. The presence of 25-norhopanes in crude oils is commonly recognized as an indicator that a petroleum accumulation has experienced severe biodegradation. Oils containing *n*-alkanes, isoprenoid alkanes and 25-norhopanes often comprise a mixture of severely degraded oil (palaeobiodegraded oil containing 25-norhopanes) with a contribution from a "fresh oil" charge contributing *n*-alkanes. Dr Barry Bennett (Director of Geosciences - Gushor) just received an award for a pivotal paper on 25 norhopanes in the journal *Organic Geochemistry*.



His paper published in 2006 is one of the "Top-50 most cited articles" published in *Organic Geochemistry* January 2006 - February 2011.

Barry Bennett, Milovan Fustic, Paul Farrimond, Haiping Huang, and Stephen R. Larter, **25-Norhopanes: Formation during biodegradation of petroleum in the subsurface *Organic Geochemistry***, Volume 37, Issue 7 (2006), Pages 787-797.



Gushor Participates in the Canadian Heavy Oil Associations 2011 Funspiel

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Geosolutions for Unconventional Systems &
Heavy Oil Recovery

Find us on the Web: www.gushor.com

Gushor's team "The Rockbreakers" put on a valiant effort and managed to go undefeated in the three games we played (thanks to some much needed bonus points)...

The Rockbreakers were; Shaun Rhyno (**Sunshine Oilsands**), Jonelle Dayle (**Husky Energy**), Magda Ciulavu (**Husky Energy**), and Richard Stephens (**Gushor Inc.**).

Thanks to the team participants!



Gushor Is On The Move – New Location Announced!

Due to Gushor's tremendous growth we will be relocating our office and laboratory as of the end of June, 2011 to better serve our valuable clientele. Our new location will be:

Bay #2, 925 – 30th Street N.E.
Calgary, Alberta, T2A 5L7

Please contact us at (403) 210-7594 if you are having trouble locating our new location.

For a larger map please visit our web site at www.gushor.com/news

