

# *Geophysical Society of Pittsburgh*

**DATE:** Tuesday, March 1st , 2011

**PLACE:** Radisson Hotel - Greentree

101 Radisson Drive, Pittsburgh, PA 15220

412-922-8400

**TIME:** 5:00 PM – Social Hour

6:00 PM – Dinner

7:00 PM – Speaker

**COST:** \$35.00

**PAYMENT:** Cash or Checks at the door. Please make checks payable to “Geophysical Society of Pittsburgh”

## **DINNER OPTIONS:**

Shrimp Orecchiette: Orecchiette Pasta with Sauteed Shrimp, Diced tomatoes, Basil, Buffalo Mozzarella & Parmesan Cheese in a Light Garlic Oil. (A 2010 Award Winner at “A Taste of Pittsburgh.”). Includes salad, bread, and dessert of Caramel Apple Pie. Coffee, Tea, Decaf Coffee, Iced Tea.

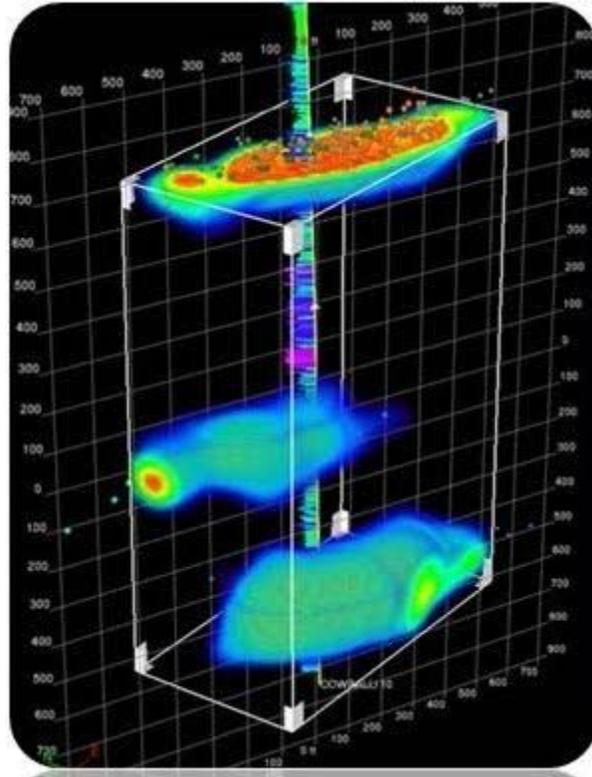
Or

Roasted Organic Chicken: Herb Encrusted Chicken Breast with Meyer Lemon and a Natural Jus. Includes salad, bread, and dessert of Caramel Apple Pie. Coffee, Tea, Decaf Coffee, Iced Tea.

Please note: dietary intolerances or allergy considerations can be made with respect to dinner choices. Please contact Mr. Philip Towey for details.

**RSVP** by February 24<sup>th</sup>, to **Mr. Philip Towey**

(email:Philip.Towey@cabotog.com)



*Presentation:*

**Analysis of a 3D-3C dataset for fracture related anisotropy over the Marcellus shale in Bradford County**

Dr. Richard W. Verm

## Geokinetics Processing & Interpretation

The utilization of seismic data to identify and characterize gas shales and their fractures is an important contributor to economically producing them. Geokinetics has recently acquired high-density, wide-azimuth 3D single-component data over large area of the Marcellus Shale in Bradford County in northeastern Pennsylvania. As part of that acquisition a 25 sq mi multicomponent test was recorded as a test to determine what additional information may be determined with this technology. Utilizing these data, both the P-waves and PS converted waves were analyzed for anisotropy which could be related to localized fracturing within the Marcellus Shale and the surrounding geology.

In the case of the P-wave data, pre-stack time migration of offset vector tiles was used to preserve offset and azimuthal information. These data were used to determine the elliptical velocities to get the azimuth of the ellipse and the maximum and minimum velocities.

For the PS data, the primary analysis was the amount of shear wave splitting that could be observed. Shear wave splitting was based on the rotation of the horizontal components to correspond to the maximum and minimum stress directions. This required imaging two separate sections, S1 and S2, and registering the two for differential time shifts. The sample by sample time differential gives an indication of local fracture intensity. In addition the PS image is registered to the PP image to give a common reference for comparisons.

The methodology used to obtain a measure of the horizontal anisotropy is briefly described for each dataset. The observed results for both the P-wave and PS-wave are compared and correlated with respect to each other, curvature analysis of the P-wave image and well control.

### Biography

**Dr. Richard Verm: Brief biography**

Dr. Richard Verm is the Vice-President of Research & Technology, Processing and Interpretation Division of Geokinetics. He worked for Geophysical Development Corporation before its purchase by Geokinetics. In addition, he has worked at the Allied Geophysical Laboratories at the University of Houston and Petty-Ray Geophysical Research a division of Geosource. Currently he is involved in the development of OBC, OBN, multi-component processing and imaging software for Geokinetics worldwide.

Richard holds a BA degree in mathematics from Rice University and Masters and Ph.D. degrees in geophysics from the University of Houston. He is a member of the SEG, EAGE and the ACM.

[Membership Form.](#)

## [Next Month's Talk.](#)

### ***"Out In Front:" 3-D Seismic Symposium set for March 29th, 2011.***

*The 17th Annual 3-D Seismic Symposium, jointly sponsored by the Rocky Mountain Association of Geologists and the Denver Geophysical Society, will be held Tuesday, March 29th, 2011 at the Marriott City Center in Denver, Colorado. This year's theme is "Out in Front," and the meeting will be co-chaired by Dave Scolman and Julie Shemeta. The 2011 committee has an impressive total of 12 presentations focusing on both Rockies case histories and the latest in other North American plays. Attendees to this year's Symposium will be witness to the most up-to-date projects in our industry, and the latest 3-D seismic data's role in those projects.*

***Click here for additional details and a more complete description of this upcoming symposium.***

[17th Annual 3-D Seismic Symposium](#)