

# *Pittsburgh Geophysical Society*

## *Fall kick-off!*

**DATE:** Tuesday, October 5, 2010

**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:** \$30.00

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

### **DINNER OPTIONS:**

*Breast of Chicken Scampi*, Garlic in a Lemon Butter Sauce, includes salad, bread, and dessert of Carrot Cake. Coffee, Tea, Decaf Coffee, Iced Tea.

Or

*Roast Pork Loin*, Herb Crusted with Apple Chutney, Chef’s Selection of Seasonal Vegetables, includes salad, bread, and dessert of Carrot Cake. Coffee, Tea, Decaf Coffee, Iced Tea.

**RSVP** by September 30<sup>th</sup>, to Mr. Philip Towey  
(email:Philip.Towey@cabotog.com)

*Presentation:*

## ***Processing and Analysis of a 3D-3C Dataset over the Marcellus in Bradford County***

**Dr. Richard W. Verm**  
*Geokinetics Processing & Interpretation*

## **Abstract**

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.

The imaging of shear waves, in particular PS converted waves, is a challenge for data processing. For starters, the PS reflection represents an asymmetric raypath. The common assumptions for CDP binning and stacking no longer hold. Velocity analysis must account for both the P-wave and the S-wave travel times. In addition, shear waves, being polarized particle motion, are very sensitive to fractured media and fracture orientation introducing shear wave splitting.

Described in this talk will be the processing of the converted wave data, including the rotation of the receivers, the analysis of the shear wave splitting, deconvolution, binning and converted wave velocity analysis and statics, and PS migration. The implications of the amplitudes and directions of the splitting for fracture characterization will be analyzed. We will also make some data comparisons of the multicomponent results to the production P-wave results.

### ***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.