



Geophysical Society of Pittsburgh



*Proudly Presents Tuesday, May 3rd , 2016
At
Cefalo's Restaurant, Carnegie, PA*

A New Three-Dimensional Look at Faulting on Seismic Data

John Castagna and Ismot Jahan

Abstract: Conventional fault attributes, such as coherency and curvature, provide means of observing the spatial distribution of faults on seismic time and horizon slices. However, they typically do not provide an acceptable fault image in vertical cross-sectional view. If the fault image is not clear in all three-dimensions, it calls into question the validity of the attribute, and how definitive it is. For example, it can be readily shown that fault locations observed on coherence attributes are usually slightly misplaced on time slices. Additionally, “false” faults may appear for a variety of reasons including steep dips and, especially in the case of curvature, due to acquisition footprint. This situation can be greatly exacerbated if post-processes such as ant-tracking are non-expertly employed. A composite fault attribute based on adaptive principle component analysis of spectrally decomposed seismic data results in more precise and accurate definition of fault locations in all three dimensions, while avoiding false faults related to dipping reflectors. In unconventional reservoirs, the improved 3-dimensional representation of faulting allows one to avoid faults that extend vertically into an aquifer, or that will cut the well path. In addition, the resulting “fault cube” is amenable to the calculation of additional attributes such as fault dip, strike, displacement, and density. These improve visualization and interpretation of the fault network, and can also be related to rock elastic properties and state of stress. These concepts are illustrated in a variety of unconventional reservoirs.



Biography:

John Castagna is the Robert Sheriff Chair in Geophysics at the University of Houston. He received his Ph. D. from the University of Texas at Austin in 1983. He has over 30 years of experience in industry and academia. His major interest is quantitative interpretation of reflection seismic data.

*Please RSVP using the PayPal link on the Geophysical Society of Pittsburgh website at: www.thegsp.org
Cost: \$35 Members, \$40 Non-members (\$20 for Students). Meeting Location: 428 Washington Ave, Carnegie, PA 15106
(412) 276-6600. Note the significant detour warning on page 2 of the newsletter.*

May 3rd , 2016 Agenda

5:00 pm Social Hour (Beer and Wine) sponsored by



6:00 pm Dinner Buffet

7:00 pm Lecture – Sponsored by

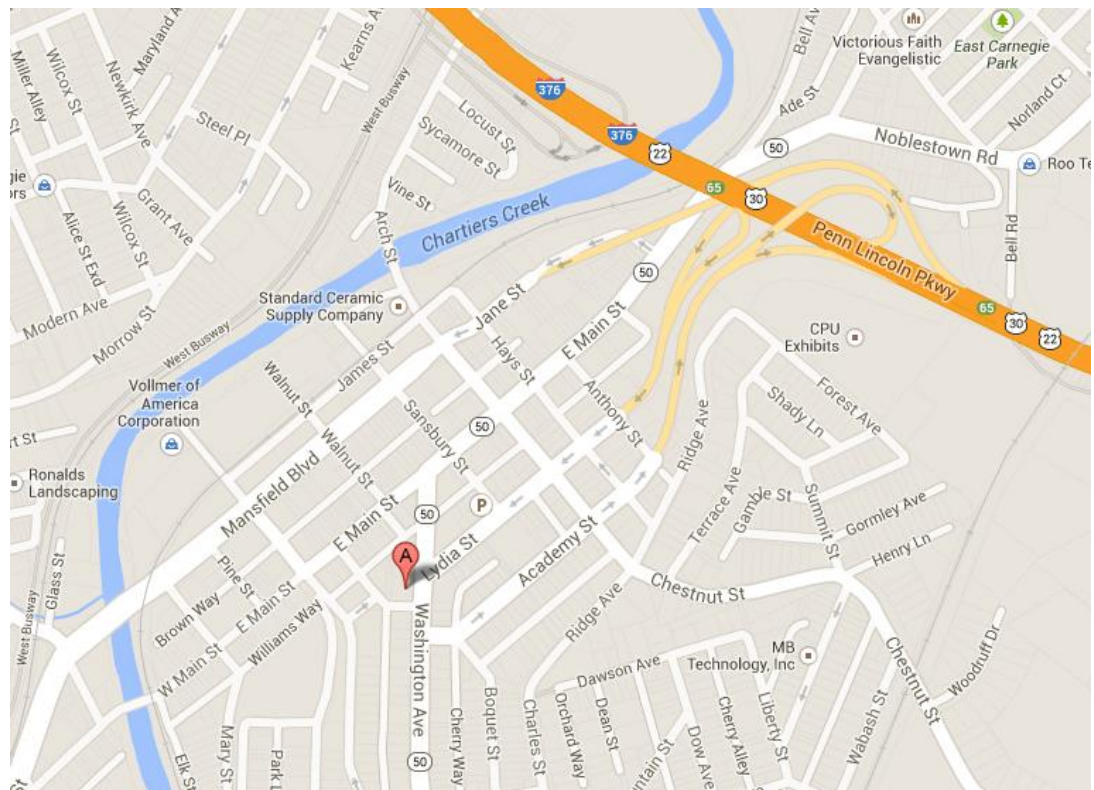


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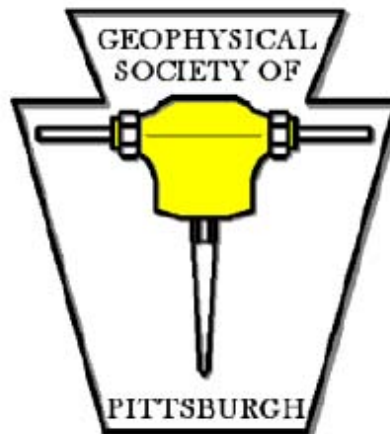
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