Thursday, February 17, 2005

Petroleum Club • 800 Bell (downtown)
Social 11:30 a.m., Lunch 11:45 a.m.

Cost: $30 for members and affiliates pre-registered by 12 noon Tuesday 15th February (No-shows will be billed.). $35 for non-members, guests, and walk-ups.

Make reservations by telephone (713-651-1639), Fax (713-951-9659), Web-site (www.sipes-houston.org), or e-mail (bkspee@aol.com) to B. K. Starbuck-Buongiorno by 12 noon Tuesday before the meeting.

SIPES
Luncheon Meeting

by ***Barbara Radovich,***
Adam Gersztenkorn,
and ***John Smythe***
Fairfield Industries

Stratigraphic and Structural Interpretation of the Gulf of Mexico Shelf from Spectral Imaging

Spectral Imaging of Correlative Events (SPICE) calculates a bed-form boundary framework from the seismic data and highlights detail from subtle changes in the seismic wavelet. The concept of spectral imaging is presented in the context of a well log model and the relationship of SPICE to impedance layering. Further validation of the method is provided by a detailed sequence stratigraphy analysis using well logs and seismic data from the Northern Gulf of Mexico.

SPICE is based on wavelet transform decomposition and singularity analysis of migrated seismic data. SPICE uses the localization properties of the wavelet transform in time and frequency to produce a unique display that provides a boundary framework of the subsurface that is rich in structural and stratigraphic detail. This advances seismic interpretation closer to the goal of producing accurate geologic mapping of the subsurface. SPICE offers a straightforward way to interpret a seismic section similar to a geologist in the field who maps beds and faults directly from the outcrop.

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Most seismic interpretation today is performed on variable area displays of the seismic amplitude of a wavelet that changes with depth. This has historically posed a number of significant problems for the interpreter. Reflections in seismic data are blurred representations of the actual stratigraphy. The interference of a changing pulse shape with a wide variety of impedance contrasts in the subsurface adds a significant element of uncertainty to the final mapping of reservoir, seal and trap. The richness and non-stationary character of the seismic trace require a process that localizes rapidly changing features in the spectrum. The unique SPICE calculation reduces the uncertainty in picking subtle bed-form boundaries and brings out the full extent of the resolution of the seismic amplitude data. ■

Biographical Sketch

Barbara Radovich is a consulting geophysicist with 25 years of worldwide experience in seismic and well log sequence stratigraphy of clastics and carbonates, fluvial to deepwater settings, and regional basin to detailed reservoir scales of investigation. She is a recognized speaker on the integration of 3D seismic attribute and visualization techniques within a framework of sequence stratigraphic architectures, especially as applied to deepwater settings. Former corporate affiliations are Exxon Production Research, Pennzoil and Texaco Exploration and Upstream Technology. She holds Bachelors and Masters degrees from Duke University and Rice University and a Doctorate in geophysics from the University of Michigan.