

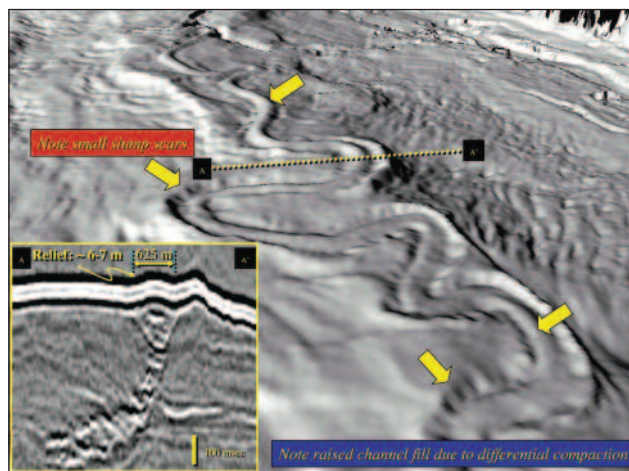
SIPES Luncheon Meeting

Using 3D Seismic Data to Predict Lithology in the Subsurface: Applications of Seismic Geomorphology and Seismic Stratigraphy from Deep Water to Shelf

Henry W. Posamentier, Chevron Energy Technology Company

3D seismic data can play a vital role in hydrocarbon exploration and development, especially with regard to mitigating risk associated with presence of reservoir, source, and seal facies. Such data can afford direct imaging of depositional elements, which can then be analyzed by applying seismic stratigraphic and seismic geomorphologic principles to yield predictions of lithologic distribution, insights to compartmentalization, and identification of stratigraphic trapping possibilities. Benefits can be direct, whereby depositional elements at exploration depths can be identified and interpreted, or they can be indirect, whereby shallow-buried depositional systems can be clearly imaged and provide analogs to deeper exploration or development targets.

Examples of imaged depositional elements from both shallow- and deeply-buried sections are presented. Deep-water deposits, in particular, have benefited greatly from analyses of 3D seismic data. The understanding of the stratigraphic and geomorphological evolution of these deposits has increased significantly since the advent of 3D seismic-based analyses. In high-cost deep-water exploration settings, insights derived from such analyses are critical to reduce risk with regard to reservoir presence and reservoir compartmentalization to ensure economic success. Depositional elements in settings such as shoreface, shelf, estuarine, and fluvial, as well as in carbonate environments, also benefit greatly from 3D seismic analyses. Numerous examples will be shown. ■



Deep-water Pleistocene turbidite channel in the Gulf of Mexico. A perspective and cross section view are shown. The positive relief that characterizes the channel suggests that the channel is sand-filled. Note the presence of levees at the outer bends of the channel. This channel is approximately 150m wide.

Biographical Sketch



HENRY W. POSAMENTIER is a Senior Geological Consultant with Chevron Energy Technology Company. He serves as a worldwide consultant to exploration teams focusing on lithofacies prediction risk issues. Prior to joining Chevron in 2007, he was with Anadarko Petroleum Corporation where he served as Chief Geologist. Earlier he was with the Atlantic Richfield Co. (1991-2000), Exxon Production Research Co. and Esso Resources Canada, Ltd. (1979-1991), and at Rider University, Assistant Professor of Geology (1974-1979).

Dr. Posamentier's research interests have been in the fields of sequence stratigraphy and depositional systems analysis, where he has published widely. Most recently, he has employed an interdisciplinary approach to the prediction of lithofacies distribution through time and space by integrating stratigraphy, geomorphology, and depositional systems analysis, using 3D seismic visualization integrated with borehole data. In 1971-1972, Dr. Posamentier was a Fulbright Fellow to Austria. He has served as an AAPG Distinguished Lecturer to the United States (1991-1992), an AAPG Distinguished Lecturer to the former Soviet Union (1996-1997), an

AAPG Distinguished Lecturer to the Middle East (1998-1999), and an AAPG Distinguished Lecturer to Europe (2005-2006). Most recently (2008) he was awarded the Pettijohn Medal for excellence in sedimentology from the Society for Sedimentary geology (SEPM). ■

Thursday, December 17, 2009

Houston Petroleum Club in the Discovery Room, 800 Bell St. (downtown Houston). Social 11:15 AM, Luncheon 11:45 AM

Reservations Required: Make reservations by telephone (713-651-1639), fax (713-951-9659), website (www.sipes-houston.org), or e-mail bkspee@aol.com to B. K. Starbuck-Buongiorno by 12:00 noon on Tuesday preceding the meeting. You can now sign up for the meeting online at www.sipes-houston.org, but payment is still required by regular mail or at the door.

Cost: \$30 for SIPES Members and Chapter Affiliates who register by 12:00 Noon Tuesday; \$35 for new registrations at the door. The price for guests, non-members and walk-ins is \$35. No-shows will be billed.