Monday, March 23, 2015

Westchase Hilton • 9999 Westheimer
Social Hour 5:30–6:30 p.m.
Dinner 6:30–7:30 p.m.

Cost: $45 Preregistered members; $50 non-members/walk-ups

To guarantee a seat, pre-register on the HGS website & pre-pay by credit card.
Pre-registration without payment will not be accepted.
Walk-ups may pay at the door if extra seats are available.

Jacob (Jake) Covault
Chevron Energy Technology Company

Predictive Organization of Deep-Water Lobes

The connectivity and facies heterogeneity of low permeability, terminal deep-water lobes are important uncertainties in reservoir characterization and development. Deep-water lobes have been conceptualized as basinwide, sheet-like deposits. However, recent work has shown more complex 3D architecture and spatial variability of petrophysical properties, which can have significant impact on reservoir performance. We use high-resolution seismic-reflection data (dominant frequency ~40 Hz) from the shallow subsurface of the Niger Delta continental slope to illustrate the stratigraphic architecture and facies variability of a deep-water lobe system. The interval of interest is a package of high-amplitude seismic reflections that is lobate in plan view and externally mounded in cross section. This interval comprises at least three sub-packages of continuous, single- or multi-cycle seismic reflections, which locally exhibit bidirectional downlap and compensational stacking. Reflections bounding the uppermost sub-package represent channel avulsion, compensation and modification of initial deposits, unconfined deposition at the channel mouth, and downstream channel bifurcation. We place our interpretations within an architectural hierarchy and consider the impact of depositional heterogeneity on fluid flow behavior during hydrocarbon production. These interpretations inform the modeling and prediction of 3D heterogeneity of deep-water lobes and illustrate the importance of detailed characterization in order to understand reservoir connectivity and quality. ■

Biographical Sketch

JACOB COVAULT is a senior research scientist at Chevron Energy Technology Company. His expertise is the sedimentology and stratigraphy of petroleum reservoirs. Prior to his present position at Chevron, Jacob served the Department of the Interior at the U.S. Geological Survey, and he received Ph.D. and B.S. degrees in Geological and Environmental Sciences at Stanford University. Jake has published a number of peer-reviewed research papers and scientific conference abstracts pertaining to petroleum geology, reservoir characterization, sedimentology, stratigraphy, basin analysis, Earth surface processes, and marine geology.