

Thursday, February 11, 2010

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

Cost: \$28 Preregistered members; \$35 non-members & walk-ups

To guarantee a seat, you must pre-register on the HGS website and pre-pay with a credit card.

Pre-registration without payment will not be accepted.

You may still walk up and pay at the door, if extra seats are available.

HGS General Dinner Meeting

Bruce Hart
ConocoPhillips

HGS General Dinner Meeting

Reservoir-Scale Seismic Stratigraphy: A Call to Integration

The introduction of seismic-stratigraphic techniques in the 1970s gave sedimentary geologists in the petroleum industry and academia new tools for predicting lithology and analyzing the depositional history of sedimentary basins. Seismic stratigraphy originally focused on large-scale exploration problems and was based on analyses of 2-D seismic data in areas that were relatively “data-poor” (i.e., few logs, core, or production data). Although these conventional seismic-stratigraphic analyses are still used fruitfully, new challenges and opportunities confront the petroleum industry as it faces the need to improve recoveries from mature fields. These areas are commonly data-rich (lots of log, core, and production data), and covered by relatively small 3-D seismic surveys that do not image all of the sequences or systems tracts that include the reservoir rocks. As such, a new mindset is needed, here termed reservoir-scale seismic stratigraphy, to help geoscientists maximize the stratigraphic information they can extract from seismic data. Integration of geological and geophysical concepts and data is critical. Techniques employed by geophysicists for at least the past decade (inversion, seismic attribute studies, seismic facies analysis, etc.) need to become routine parts of the sedimentary geologist’s toolkit, whereas seismic interpreters need to study outcrops, cores, and modern analogs in order to anticipate the presence of depositional features that cannot be resolved seismically. This cross-disciplinary interaction will undoubtedly spawn new breakthroughs in sedimentary geology, reflection seismology, petroleum geology, and related fields (e.g., hydrogeology). These are exciting times. ■

Biographical Sketch

BRUCE HART is currently Director of the Shale, Seal and Pressure

Systems Group at ConocoPhillips in Houston. He has a bachelor’s degree from McMaster University, a master’s degree from the Université du Québec à Rimouski, and a Ph.D. from the University of Western Ontario. He pursued a career in research at the Geological Survey of Canada, Penn State, The New Mexico Bureau of Mines and Mineral Resources, and McGill University prior to joining ConocoPhillips in August 2008.



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Mr. Hart began his geoscience career as a clastic sedimentologist, but eventually found himself examining stratigraphy with 3-D seismic data. Subsequently, he and his students integrated 3-D seismic, log, outcrop, core, production, and other data types to address a range of structural and stratigraphic problems from Paleozoic, Mesozoic, and Cenozoic clastic and carbonate reservoirs from various parts of the globe. Much of that work has been documented in over 50 peer-reviewed publications that cover topics such as seismic attribute analyses, hydrothermal dolomites, fractured tight-gas sandstones, sequence stratigraphy, pore-pressure prediction, and the sedimentology of shoreface conglomerates.

He has taught courses and workshops on 3-D seismic interpretation for industry professionals in Cairo, Calgary, Copenhagen, Houston, Kuala Lumpur, London, New Orleans, The Hague, Vienna, and elsewhere. His current work focuses on the relationships between shale depositional processes and hydrocarbon seals, source rocks, and pressure systems.