

Monday, April 27, 2009

HGS North American Explorationists Dinner Meeting

Westchase Hilton • 9999 Westheimer

Social Hour 5:30-6:30 p.m. • Dinner 6:30-7:30 p.m.

Cost: \$28 pre-registered members; \$35 for non-members & walk-ups;

Emeritus/Life/Honorary: \$14; Students: FREE

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

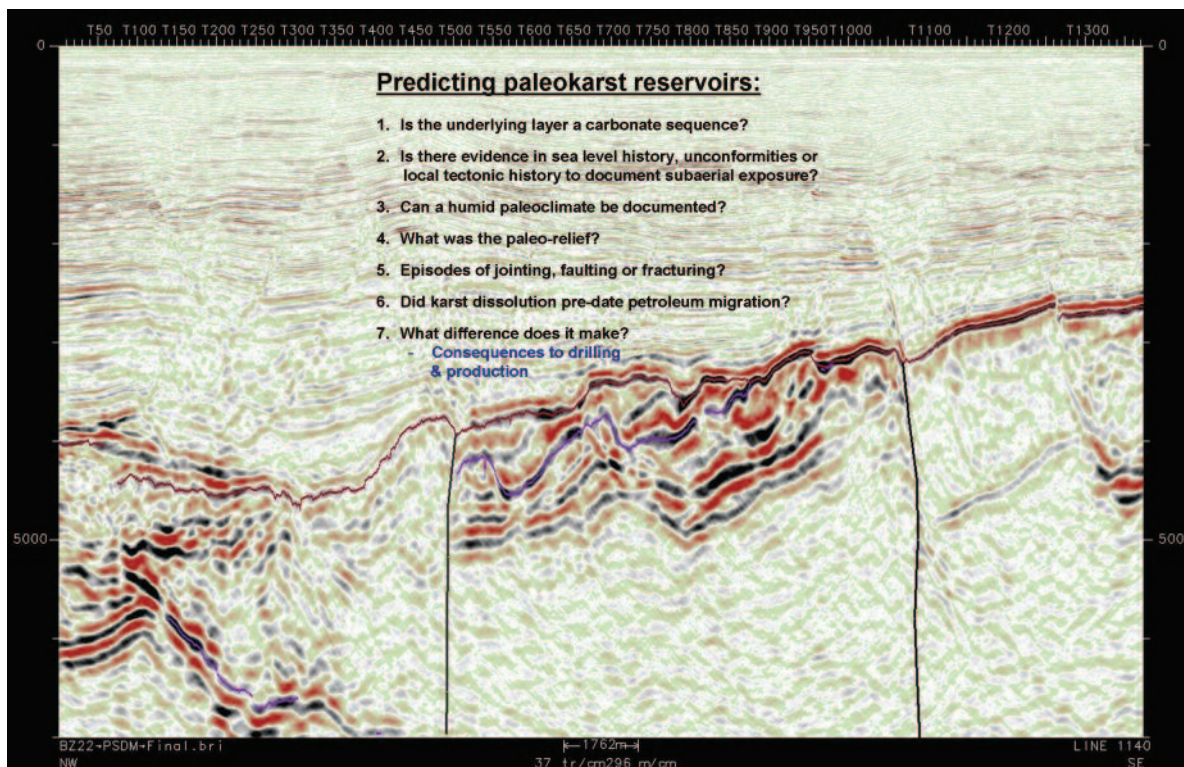
Pre-registration without payment will not be accepted.

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

Dinner Meeting

Charles T. Feazel
Subsurface Technology,
ConocoPhillips

Using Modern Cave Systems as Analogs for Paleokarst Reservoirs



Dissolution processes, hydrology, void dimensions, and architecture are useful in understanding karsted rocks that serve as reservoirs for oil and natural gas. Three-dimensional cave surveys can be used to assign properties to “karst” cells in geocellular models. Surveys of long karst passages (e.g., Yucatan flooded caves) can be used to infer connectivity (i.e. how many “karst” cells can be neighbors?).

Karst processes ranging from surface weathering to deep burial dissolution have affected numerous karsted intervals that host petroleum accumulations. Recognition and prediction of subsurface paleokarst from seismic or borehole information and prediction of potential petroleum production involves addressing the following questions:

- Does the layer in question consist primarily of carbonate rocks?

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- Is there evidence to suggest subaerial exposure of the carbonates?
- Can a humid paleoclimate be documented?
- What was the paleo-relief?
- Does the tectonic history include episodes of jointing, faulting, or fracturing that would focus flowing water in the paleo-hydrologic setting?
- Is there reason to suspect burial dissolution?
- Did karst dissolution pre-date petroleum migration?
- What differences would karsting make to wellbore deliverability, well spacing, drilling operations, injection strategies, and production profiles?

Analogous and regional studies incorporating the elements of these questions can be used in the exploration and production workflow to identify potential problems and opportunities, to constrain geo-model input, and to improve communication of subsurface risks and uncertainties. ■

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Biographic Sketch

CHARLES T. FEAZEL is a senior scientist in the Subsurface Technology group at ConocoPhillips. In 34 years with the company, he has had research and management assignments in Oklahoma, Texas, and Norway. He earned a B.A. in geology from Ohio Wesleyan University and M.A. and



Ph.D. degrees from Johns Hopkins. His specialties include carbonate sedimentology, reservoir description, field development, and a wide spectrum of reservoir characterization from depositional facies to flow units. Dr. Feazel has experience in numerous geographic regions and geological settings, including the Nevada desert, various Caribbean islands, Greenland, the Beaufort Sea, the North Sea, Alaska, the Gulf of Mexico, the United States Midcontinent, the Mid-Atlantic Ridge, the Caspian Sea, and the Middle East.