Thursday, June 15, 2006

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

Register online, call, fax or e-mail your reservation to Mrs. B.K. Buongiorno at Tel: 713-651-1639, Fax: 713-951-9659, e-mail: bkspee@aol.com by 12:00 Noon, Tuesday June 13, 2006. **Members and Affiliates who register by June 13 pay $30. The cost is $35 for guests, non-members, and new registrations at the door.** No-shows will be billed. You can now sign up for SIPES Meetings online at www.sipeshouston.org, but payment is still required by regular mail or at the door.

SIPES Luncheon Meeting

by ***Dan Jarvie***
Humble Geochemical Services

Geochemical Logic and Techniques for Unconventional Gas Exploration

Source rocks have been oil productive for many years, typically from highly fractured units or from adjacent porous intervals. In addition source rocks may be good resources for gas if they have the optimal organic richness and thermal maturity necessary to have converted both residual kerogen and any retained oil to gas. Obviously, completion engineering is a critical component of extracting the gas from these systems, but commercial rates will not be achieved if a minimum level of conversion or thermal maturity has not been reached.

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While gas is generated in the oil window from all kerogen types (whether oil or gas prone), the presence of black oil components will occlude the limited permeability of a tight shale system, resulting in low flow rates and precipitous decline rates. Thus, even though gas shows are present in the oil window and measured gas contents can appear commercial, it does not necessarily indicate the likelihood of commercial shale gas production. Gas window thermal maturity is a critical component of producibility as the presence of higher molecular black oil components will occlude the limited permeability of a tight source rock and result in low gas flow rates.

Thermal maturity should be assessed by both visual and chemical means. Visual methods such as vitrinite reflectance are the most common means and are widely used. Oftentimes, however, vitrinite reflectivity is not the best indication of the presence of producible gas from tight rocks. These data should be complemented by data obtained through chemical techniques. These techniques include Rock-Eval Tmax, kerogen transformation ratio, gas composition, carbon isotopes, and residual liquids fingerprinting. Using these techniques, the extent of organic matter conversion to gas can be accurately determined. The key point is that indications of thermal maturity may not necessarily agree with the extent of kerogen conversion, nor provide a good indication of the presence of problematic compounds. Gas risking plots can then be constructed to ascertain if all data provide a consistent assessment of gas producibility. ■

Biographical Sketch

Dan Jarvie is an analytical and interpretive organic geochemist. He works conventional petroleum systems but has been involved in unconventional oil and gas work since 1984. He earned a BS from the University of Notre Dame and was mentored in geochemistry by Don Baker of Rice University and Wallace Dow, formerly of DGSI. He is president of Humble Geochemical Services.