

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.

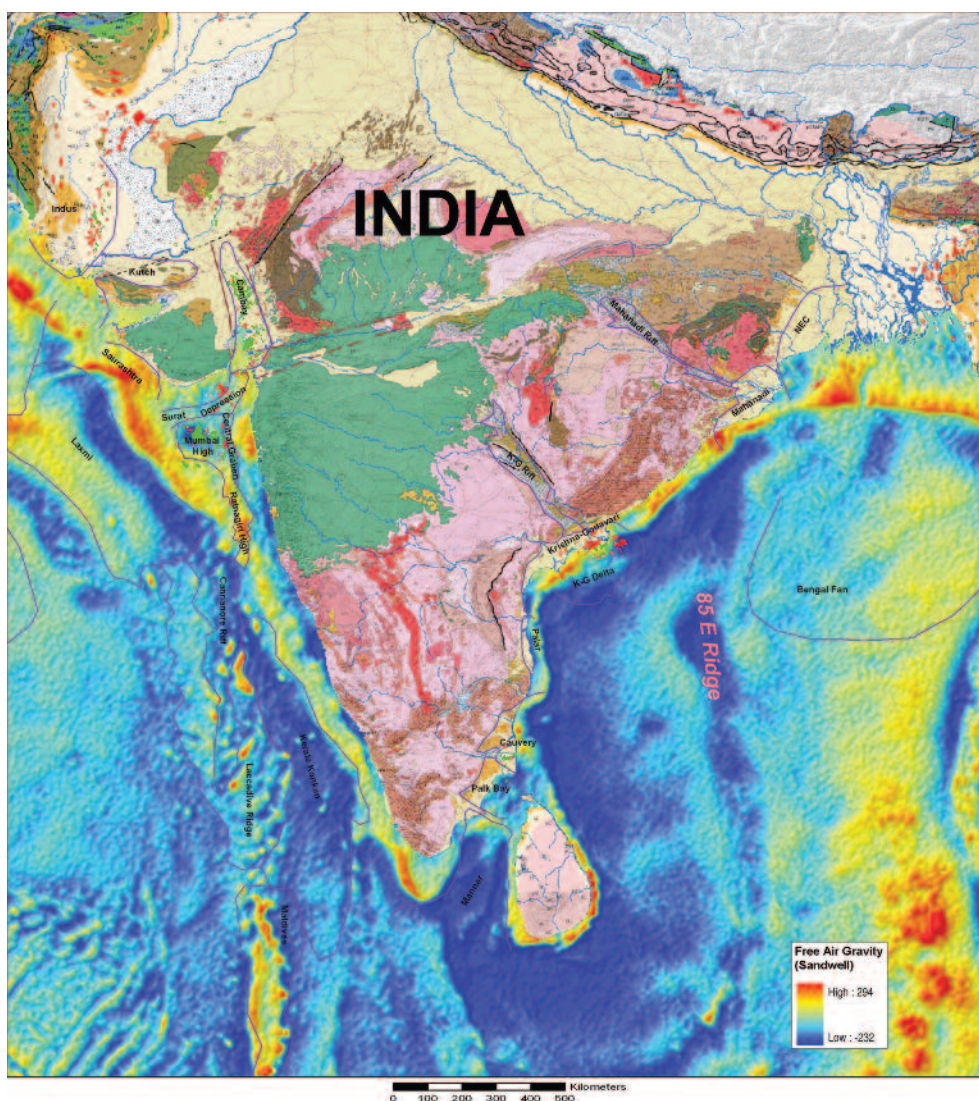
You may still walk up and pay at the door, if extra seats are available.

*Al Danforth, Independent Geological Consultant, Geological Advisor to GX Technology, Houston, TX*  
*Steven G. Henry, Rift Institute for Teaching and Training, Las Cruces, NM and*  
*Sujata Venkatraman, GX Technology, ION Geophysical, Houston, TX*

## India—Historical and Emerging Plays, Identifying New Petroleum Systems Using Regional PSDM Seismic Data

This presentation provides an overview of the historic producing provinces of India. The discussion will include examples of recent emerging plays together with some new play ideas

for India's offshore areas based on the results of a campaign of regional pre-stacked depth migrated (PSDM) seismic acquired in 2006-2007 by ION-GX Technology.



India: Surface geology and free air gravity—showing basins and oil and gas fields.

The history of oil and gas discoveries in India dates back to 1867 in the Assam Basin onshore and to the 1974 discovery of the giant Bombay (Mumbai) High field off the west coast. Earliest east coast discoveries were in 1979-1980 in the Krishna-Godavari (K-G) Basin near the coast and expanding to the offshore in the 1990s. Since then, gas was found along the east coast in a few fields in the Mahanadi Basin in 2003, but the big east coast gas reserves were discovered in the new offshore K-G fields. These discoveries now total over 30 trillion cubic feet of gas and promise to provide a sorely needed source of fuel to meet India's rapidly growing energy consumption. Most recently, discoveries in the Cretaceous beneath the K-G Tertiary gas field, in the deep water of the Cauvery Basin, and in the Kutch Basin on the west coast, suggest additional new potential.

Two examples of new plays will be presented that have greatly increased India's exploration

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potential. The first, on the east coast, is the 85E Ridge. The 85E Ridge was previously thought to be a hot spot track and is now interpreted to be a continental fragment supporting a very large (50 by 100 kilometer) carbonate platform underlain by potential Jurassic through Cretaceous source rocks.

The second example is a large deep (15 to 20 kilometer) coastal graben that likely contains Albian-Aptian source rocks in the active oil generation window beneath the Deccan Traps on the west coast.

Understanding the new play ideas relies on data from India's conjugate margins in Africa and Antarctica, and on analogs to the formation of Indian continental margins that formed during the breakup of Gondwana. ■

#### **Biographical Sketch**

**AL DANFORTH** is a regional geologist providing exploration consulting to large and small companies in Houston, Texas. Retired after 30 years of new venture exploration in the international arena for Texaco and Chevron,

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he is knowledgeable in all aspects of the business of exploration and experienced in many of the producing and frontier areas of the world. Focused on the regional geology of Africa and its conjugate margins, especially the historic and emerging plays of West Africa, his specialty is understanding petroleum systems in deltas, rift basins, and salt tectonics provinces.

Mr. Danforth is active in the International Explorationists Group of the Houston Geological Society and he is also organizer of an annual conference on Africa E&P convened jointly with the Petroleum Exploration Society of Great Britain (PESGB). The two-day conference, which alternates between London and Houston, will next be held in London September 9-10, 2009.

Currently, he is principal geological advisor to ION-GX Technology on the design and interpretation of regional seismic surveys around Africa and its conjugate margins in the South Atlantic and Indian Ocean.