Monday, October 17, 2005

Westchase Hilton • 9999 Westheimer
Social 5:30 p.m., Dinner 6:30 p.m.

Cost: $25 Preregistered members; $30 non-members & walk-ups

The HGS prefers that you make your reservations on-line through the HGS website at www.hgs.org. If you have no Internet access, you can e-mail reservations@hgs.org, or call the office at 713-463-9476. (include your name, e-mail address, meeting you are attending, phone number and membership ID#).

International Explorationists Dinner Meeting

by ***Robert Hickman***
Structural Solution

Basins of Offshore Peru: New Exploration Framework and Plays

The prospectivity of Peru's offshore basins has been evaluated by a USTDA funded study conducted by Gaffney Cline & Associates for Perupetro. In contrast to most convergent margins, the coastal basins of the northern continental margin of Peru have been highly productive, producing more than 1.8 billion barrels of oil. This productivity is fundamentally related to the anomalous nature of the continental shelf and upper slope, which are underlain by Precambrian and Paleozoic continental crystalline rocks rather than accreted oceanic rocks. Paleozoic and Cretaceous sediments overlie the crystalline rocks. During the Cenozoic, several extensional basins formed and subsequently were inverted as a result of reactivation of basement faults.

In contrast to most convergent margins, the coastal basins of the northern continental margin of Peru have been highly productive

Unlike offshore basins farther south, the northernmost Tumbes-Progreso basin is a large pull-apart basin. The basin has produced oil and gas from the Neogene section; however, a thicker Eocene section remains essentially untested. BPZ Energy is currently proceeding with the development of Corvna and Pietra Redonda gas fields. Good source rocks are present within the basin. Exploration risks are presented by the complex structure produced by extensional faulting and local inversion, and also by reservoir uncertainties.

The bulk of coastal production has been from the Talara Basin, where numerous Paleogene, Cretaceous and Paleozoic reservoir intervals have been established. Exploration risks relate to reservoir quality and reservoir segmentation caused by multiple sets of extensional faults. Recently, Petro-Tech Peruana made a discovery at the south end of the basin in fractured Paleozoics.

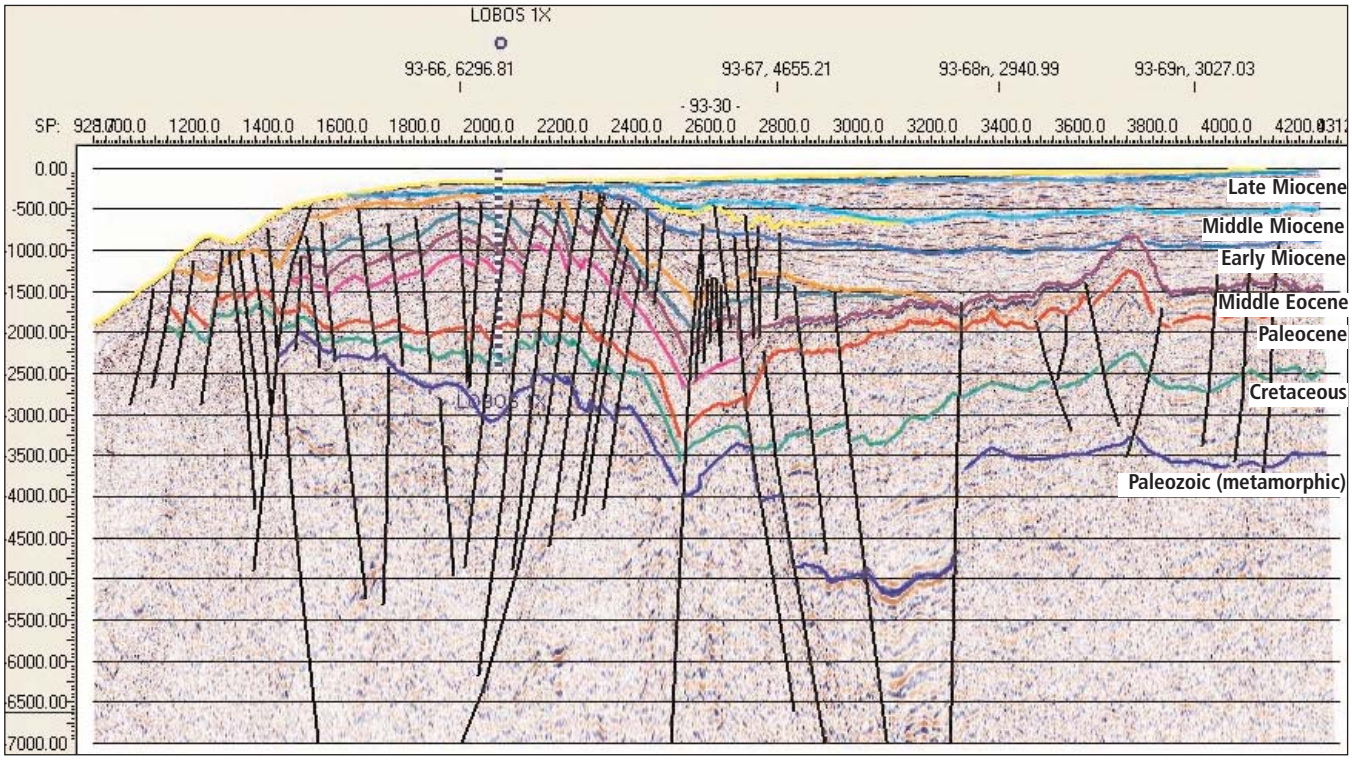
Farther south, the Trujillo Basin has been tested by only four exploratory wells, while the offshore portions of the Sechura, Salaverry and Pisco Basins remain undrilled. Oil seeps and maturation modeling suggest the presence of mature Cretaceous source rocks in all three basins and early mature Eocene source rocks in the Trujillo basin. Anticlinal and fault traps are widespread in these basins as a result of multiple periods of Cenozoic extension and compression. Analysis indicates that two of the four Trujillo wildcat wells were drilled off-structure with respect to deep targets, while the other two tested the basement arch between the Trujillo and Salaverry basins. Reconstructions indicate traps along this arch formed only in the late Miocene. Although this timing diminishes the prospectivity of the arch, it allows charging of traps in the Salaverry basin with hydrocarbons migrating from the Trujillo basin during the late Eocene to early Miocene.

Targets in the Trujillo Basin include turbidite sands. This study has resulted in a better

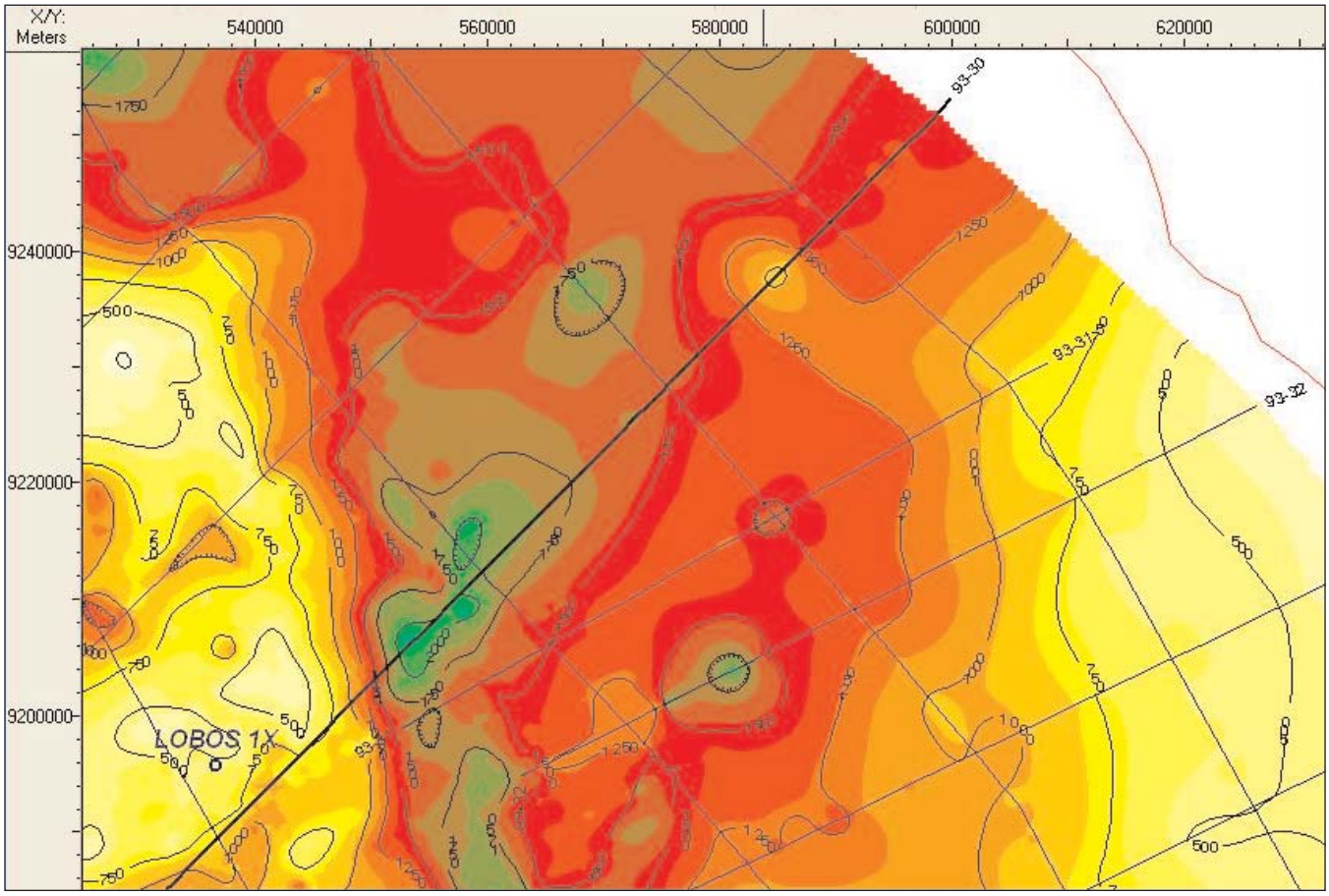
International Meeting *continued on page 16*

Peru Basins

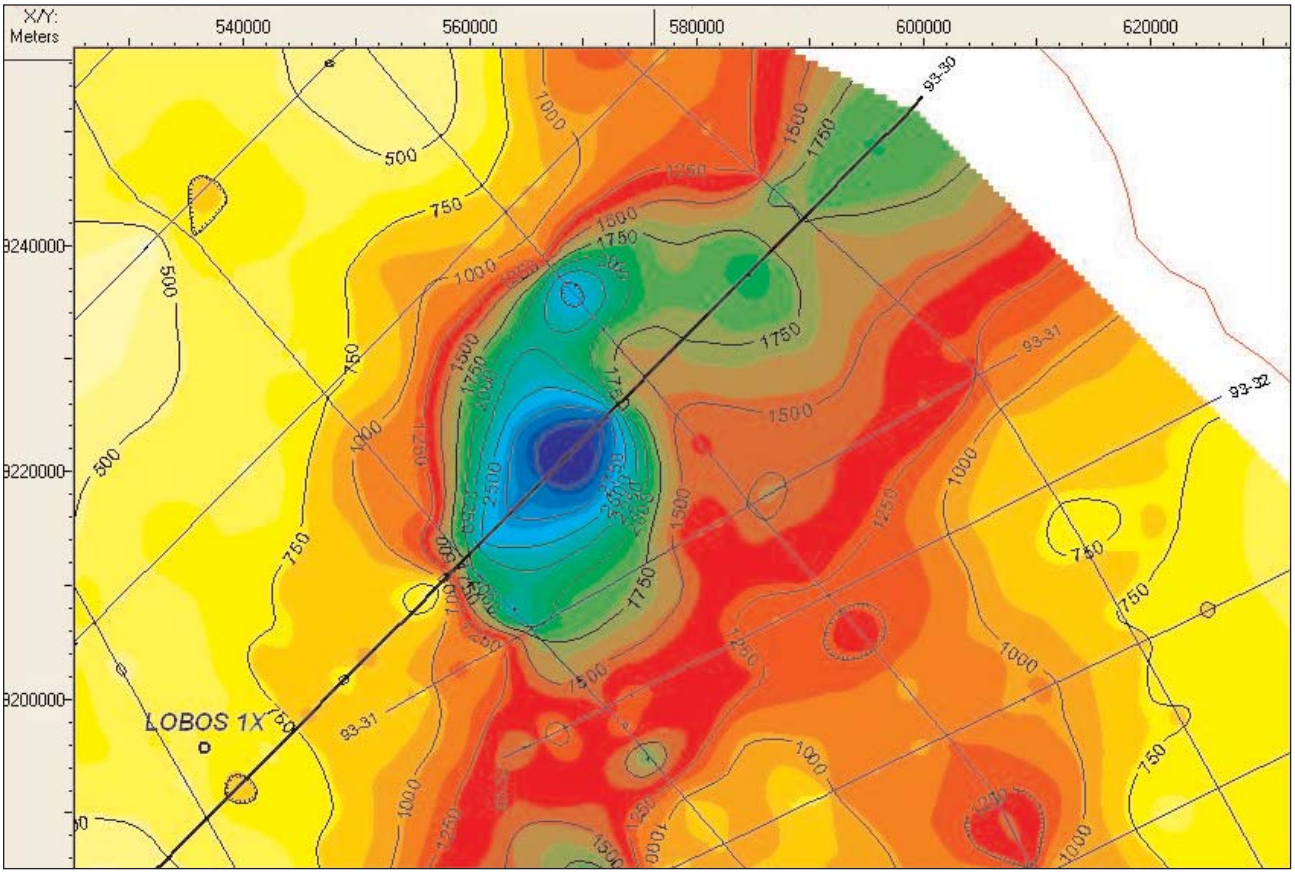
HGS International Meeting continued from page 15



Depth-converted seismic profile from offshore Peru traversing the Trujillo basin (SP 1400-2400), the Trujillo-Salaverry arch (SP 2600-2800) and the northern part of the Salaverry basin (SP 3000-4200). The profile shows a pop-up structure to the northeast of an extensional basin.



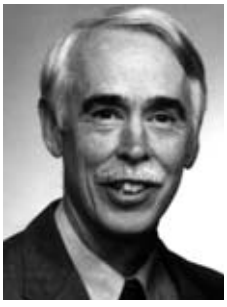
Structure map of the Middle Eocene, inferred from its seismic-stratigraphic signature to be carbonate-prone. The structure map shows the areal extent of a pop-up structure to the northeast of an extensional basin. Spacing between adjacent dip profiles is approximately 20 km so only the largest features show up on this regional grid.



Isopach map from the top of the Middle Eocene to the top of the Paleozoic basement metamorphics, encompassing the basal Tertiary, Paleocene and Cretaceous sections which include coarse siliciclastics (conglomerate and sand) in the Lobos 1X well. The Cretaceous section may include a Muero Fm (equivalent) source interval known to be present to the north in the Talara basin. The Cretaceous section is mature for oil in the subbasin roughly defined by the 2,500 m isopach contour, based on thermal maturation modeling.

understanding of the paleogeography that controlled the distribution of these sands. Cretaceous sandstones in the Trujillo and Salaverry Basins and probable Eocene carbonates in the Salaverry and Pisco Basins may also be prospective. Fractured Paleozoic strata are objectives in the Sechura Basin and perhaps in the other basins as well. ■

Biographical Sketch



Robert Hickman is a structural geologist, skilled in regional tectonic interpretation and analysis of complex structures. His experience includes a long career with Unocal, where he headed the Structure and Petrology group, was a Sr. Research Associate, a Consulting Geologist and Coordinator of Structure and Remote Sensing.

Mr. Hickman has a BS degree in geology from Stanford and a Masters and PhD degrees in geology from the University of Wisconsin.

Currently Bob has his own consulting company, Structural Solution.