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Social 11:15 a.m., Luncheon 11:30 a.m.

Cost: \$31 Preregistered members; \$35 non-members & walk-ups

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by Peter Bartok

## New Insights into the Geologic Development of Reforma, Southern Mexico

The Reforma region of México is unique to the Gulf of Mexico. The well-documented Gulf of Mexico Mesozoic salt and carbonate sequences persist into the Reforma region. However, in Reforma the typical Gulf passive margin facies were overprinted by Pacific plate-induced transform faults and compressional systems during the Paleogene and Neogene. The region is further complicated by the emplacement of an allochthonous terrain (Chiapas Massif) during the Mesozoic and uplift of the terrain during the Tertiary. This makes the basin structurally complex yet allows for the development and preservation of giant fields. The study will review the general sedimentation patterns and review the structural development of the region.

The Triassic to Lower Jurassic rifting does not play as significant a role as previously considered. Paralic to marine carbonate and evaporite deposition prevailed from the Bajocian/Bathonian to the Cretaceous. Classic salt province subdivisions can be established. Of interest is the onshore region of Salina del Istmo (located west of Reforma). Salt in this region is dominantly allochthonous with significant salt tongues. Progressively, to the southeast, the salt provinces change to diapiric and eventually to salt rollers. The Tertiary is dominated by siliciclastics.

The Reforma region corresponds to the Maya tectonic block. Studies have shown that the block has been displaced to the south by approximately 1000 km. The exact timing for juxtaposition of the Chiapas Massif to the Maya Block is subject to discussion. Most studies imply that by Late Jurassic the position of Yucatan was very close to its present location. Therefore, Chiapas was transported during the Middle to Late Jurassic translation. There is no evidence of significant clastic deposition being shed from the Chiapas Massif during the Middle to Late Jurassic. It is therefore suggested that the Massif had a low relief.

The oblique displacement of the Chortis Block (S. Guatemala/Honduras) affected the Reforma region from Late Cretaceous to Early Paleogene, resulting in compressional features that by the

Eocene induced major salt diapirism in the basin. Noticeably, the Paleocene and Eocene stages were periods of very low sediment deposition. Carbonate (Macuspana limestone) banks flourished along the southeastern margin of the basin. Significant clastic basin fill persisted through the Neogene to the Recent. By the Late Eocene the Chortis Plate passed southern Chiapas and the subducted Cocos Plate played a dominant role culminating in the Middle Miocene Chiapaneca orogenic event. This Miocene event resulted in basin shortening and much of the thrusting observed in the basin.

Examples from the Jujo-Tecominoacan and Artesa Mundo Nuevo regions will be used to demonstrate the principal facies distributions, structural style, and exploration potential in the region. The study is based on several publications co-authored by Bartok. ■

*The emplacement of an allochthonous terrain... during the Mesozoic and uplift of that terrain during the Tertiary... makes the basin structurally complex yet allows for the development and preservation of giant fields.*

### Biographical Sketch

PETER BARTOK is a consulting geologist and an Adjunct Professor of Petroleum Geology at the University of Houston. Most of his career has been spent on exploration in over 40 basins of the world. These basins include most of the petroleum basins of South America, Angola, the North Sea, southeast Asia and the Gulf of Mexico. He has been a consultant for the past 14 years, and has worked for BP (10 yrs), Texaco (5 yrs) and with PDVSA (5 yrs) in Venezuela. He was a senior advisor to Pemex, spending three years studying the Reforma trend.

Bartok has focused his more recent projects on complex structural problems involving thrusting and salt tectonics. Presently he is working on exploration in the North Louisiana Salt Basin and in the Black Warrior Basin (USA).

Peter Bartok has published several papers on the geology of Venezuela, Gulf of Mexico and Mexico's Reforma trend. Bartok received both his MS and BS from the State University of New York at Buffalo.