Tuesday, January 15, 2008

Crowne Plaza Hotel (former Sofitel Hotel) • 425 Sam Houston Pkwy. North
Social 11:15 a.m., Luncheon 11:30 a.m.

Cost: $31 Preregistered members; $35 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#).

A Regional Erosion Surface and its Effect on the Smackover Reservoir-Seal System Along the South Arkansas–North Louisiana Jurassic Shelf

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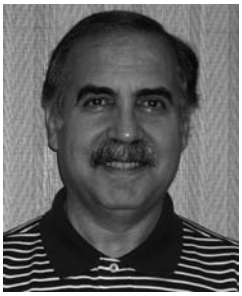
The Upper Jurassic Smackover Formation displays three shoaling-upward cycles in the north-central U.S. Gulf Coast (Louisiana-Arkansas-Mississippi). From the base, they include the Smackover "C," Smackover "B" and Smackover "A" cyles. The basal "C" cycle consists of an upward succession of lithofacies indicating a progradation of beach-to-basin environments. The overlying "B" cycle encompasses massive grainstones formed as Bahamian-type marine sand bars. The "A" cycle includes isolated shelf-margin ooid shoals. Although each cycle has its own characteristics, the overall reservoir potential of the Smackover carbonates in this area depends on a complex interplay of depositional environments, pre- and post-burial diagenetic processes, hydrocarbon source and seal capacity.

In our recent investigation, the reprocessing of 3D-seismic data with enhanced high-frequency attributes and a high signal-to-noise ratio clearly depicts linear, 1- to 2-mile-long buildups of porous marine bars of the Smackover "B" cycle. These bars appear to trend WNW–ESE and were formed along depositional strike of the South Arkansas Jurassic shelf edge. One particular bar, which was drilled and conventionally cored, is at least 80 feet thick, provides structural drape and local thinning of overlying sediments, and exhibits an obvious velocity sag on the underlying seismic reflectors.

A detailed investigation of conventional cores shows evidence of a major erosional surface at the top of the Smackover Formation.

In the two wells that tested this feature, the contact between the Smackover marine bar and the overlying Jones Sand member of the Haynesville Formation is abrupt and appears locally scoured. A detailed investigation of conventional cores shows evidence of a major erosional surface at the top of the Smackover Formation. In fact, cemented oolitic grainstone clasts are incorporated into the siliciclastic shallow marine sediments of the overlying Jones Sand. It is obvious that the potential seal to this otherwise very attractive Smackover reservoir has been breached by an erosional event at the top of the "B" cycle. ■

Biographical Sketches



Ezat Heydari's education includes a BS degree from the University of Tehran in Iran, an MS degree from the Pennsylvania State University and a PhD from Louisiana State University. He has worked as a research scientist for Louisiana State University and for the Mississippi Office of Geology. He is currently an Associate Professor of Earth Science at Jackson State University, Jackson, Mississippi.

Dr. Heydari specializes in sedimentology—stratigraphy, depositional environments, petrography—diagenesis, low-temperature geochemistry, subsurface geology and petroleum geology. He conducts field and laboratory investigations to investigate the causes of events that shaped Earth's history. One of his active research projects includes detailed studies of Jurassic oil and gas reservoirs of the U.S. Gulf Coast. He has also investigated Permian and Triassic strata of Iran to decipher the cause of a mass extinction that left the Earth nearly lifeless about 251 million years ago. He is the author of 35 published research papers and 50 conference presentations.

After receiving a BS in geology in 1967, **Larry Baria** pursued a master's degree in stratigraphy and sandstone petrology at Northeast Louisiana University and PhD studies in carbonate facies, stratigraphy and sulfate diagenesis at Louisiana State University. Early in his career he worked as a field geologist in Louisiana, Arkansas, Colorado and

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Alaska while employed by the U.S. Forest Service, the Arkansas Geological Commission and the USGS. After leaving LSU, he went to work for Getty Oil Company in its E&P Research lab, where he specialized in Cretaceous and Jurassic stratigraphy. In 1976 Mr. Baria moved to Jackson, Mississippi, to work with Enserch Exploration in Jurassic and Cretaceous exploration of the eastern Gulf Coast. Since 1980 he has been a consulting geologist active in the generation of prospects within the Haynesville, Smackover and Norphlet Formations. In addition to generating prospects, he often consults with companies active in Jurassic exploration both inside and outside the Gulf Coast Region.