

AAPG HEDBERG CONFERENCE
“Microbial Carbonate Reservoir Characterization”
June 4-8, 2012 – Houston, Texas

**Simulation of the Upper Jurassic Smackover Carbonate Facies at Little Cedar Creek Field,
Northeastern Gulf of Mexico**

Moetaz Mostafa

Berg-Hughes Center and Department of Geology & Geophysics, Texas A&M University, College Station, Texas

Little Cedar Creek Field (LCCF) located in State of Alabama is the largest Smackover Formation field discovered in the northern U.S. Gulf Coast in the last three decades. By March 2011, 12.7 MMSTB of oil and 12,430.6 MMSCF of gas have already been produced. The LCCF produces from Upper Jurassic Smackover carbonate reservoirs. The field is characterized to be dual-reservoir field with pure stratigraphic near the updip depositional limit of the Smackover. The upper reservoir is peloid-oid shoal grainstone while the lower is microbial (thrombolite) boundstone. The ultimate objective of this study is to propose a field-scale development plan that includes pressure maintenance operation, infill drilling, and re-perforation of existing wells in either lower or upper reservoir. Also, the uncertainty in re-estimated OOIP, and probable and possible reserves are calculated. Through dynamic simulation, reservoir performance studies, material balance evaluation, PVT analysis, and Monte Carlo simulation, the reservoir drive mechanism, original oil-in place along with its uncertainty, possible and probable reserves, and undrained portions of reservoirs are determined. The integration of the PVT and reservoir pressure data assists in the assessment of the heterogeneity of the reservoirs and the identification of uncontacted compartments. Based on the location of these compartments in the reservoirs and the dynamic simulation model, the optimum field/reservoir development plan is designed for maximizing recovery from the field.