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**DOE Class II Project-Improved Oil Recovery from Upper Jurassic Smackover Carbonates, Womack Hill Field, Alabama, Eastern Gulf of Mexico**

Oil was discovered in Upper Jurassic Smackover carbonates at Womack Hill Field, Choctaw and Clarke Counties, Alabama, eastern Gulf of Mexico in 1970. A waterflood project was initiated in the western portion of the field in 1975. To date, 30.7 million barrels of oil have been produced from the field. Estimated in-place oil reserves for the field are 119 million barrels. Additional reserves are projected to be recovered through the application of advanced technologies. Characterization and modeling of reservoirs in the Smackover carbonate shoal complex have the potential to improve field-scale reservoir management. The Smackover is productive from reservoirs that occur in vertically stacked porosity cycles. The cycles typically consist of carbonate mudstone at the base and ooid grainstone at the top. Porosity has been enhanced through dissolution and dolomitization. Porosity is chiefly solution-enlarged interparticle, grain moldic and dolomite intercrystalline pores. Reservoir modeling has demonstrated that potential lateral barriers to flow are present as a result of petrophysical differences among and within the cycles. Seismic data indicate a fault in the central area of the field. The pressure differential that exists between the wells in the western and eastern portions of the field is attributed to the presence of this fault and/or petrophysical changes across the field. The cycles are, in part, vertically separated by lower porosity intervals in their bases. A 3-D geologic model was constructed to be used as a stratigraphic framework for reservoir simulation and in the design of improved production strategies for the field.