

The Depositional Environment and Reservoir Characterization of the Taylor Sandstone at Woodlawn Field, Harrison County, East Texas

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ABSTRACT

The Taylor Sandstone, of Late Jurassic age, is dominantly a shallow marine sandstone and mudstone unit in the Cotton Valley Group, and has produced several trillion cubic feet of gas from numerous fields in east Texas. This study utilizes conventional cores and field-wide coverage with well logs in the Woodlawn Field. Through an integrated ichnologic and sedimentologic analysis of the core, a depositional framework for the Taylor Sandstone has been interpreted and the sequence stratigraphy of the Taylor system has been established. Several parasequences, representing seaward progradation of shorefaces and subsequent flooding events have been identified and are mapped across the entire field.

We recognize numerous lithofacies within the Taylor parasequences that have distinctive reservoir characteristics and are mappable throughout the field with corresponding e-log responses. Porosity distribution, a result of original sedimentation and early biogenic overprint and subsequent burial cementation, controls reservoir quality within the field. Mapping porosity changes with respect to facies will help identify areas in the field which are candidates for drilling and which might have been previously overlooked.