

## CONTROLS ON FACIES DISTRIBUTION OF THE DOWNDIP JURASSIC IN EASTERN TEXAS

Andrew J. Davidoff<sup>1</sup>

### ABSTRACT

As the East Texas region becomes increasingly mature, deep wells are testing the downdip Jurassic. Well log and seismic data indicate the section was deposited in a basin, hereafter referred to as the Brazos basin, located between the Lower Cretaceous shelf edge and the East Texas basin. The Brazos basin is separated from the East Texas basin by a major northeast-southwest trending feature called the Houston arch. The stratigraphy and facies distribution of these two basins are distinctly different.

The Houston arch was a topographic high throughout Callovian time, and now separates the Louann salt of the two basins. The arch also blocked southward migration of the Norphlet sandstone. During Oxfordian to Kimmeridgian time, shallow-water carbonates of the Louark Group were deposited in the East Texas basin while deepwater carbonates were deposited in the Brazos basin. Final Jurassic sedimentation in eastern Texas consisted of the Cotton Valley Group. These sandstones prograded from the East Texas basin, through a saddle in the Houston arch, and into Brazos basin. Deposition of the Cotton Valley sandstone was interrupted by a brief transgression during which the Knowles Limestone was deposited. The position of this limestone was controlled by the northern boundary of the Brazos basin. Above the Knowles Limestone is a wedge of sandstone not found in the East Texas basin.

The downdip Jurassic has excellent potential for hydrocarbon production. Understanding the effect of the Brazos basin on the stratigraphy and facies distribution is crucial to future exploration.

---

<sup>1</sup> Texas A&M University, Department of Geology, College Station, Texas 77843-3115