

The Upper Jurassic Bossier Sandstone Play of the East Texas Basin

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Abstract

Preliminary studies of the Upper Jurassic Bossier sandstone play, East Texas Basin, suggest that the Bossier may be a self-sourced low-permeability continuous-type accumulation similar to those found in the Rocky Mountain Region. Reservoirs consist of isolated sandstone bodies informally designated, in ascending order, as the Bonner, Shelly, Moore, and Taylor. These sandstone are interpreted by others as turbidite deposits that resulted from a high influx of deltaic debris.

Initial characterization of gases produced from the Bossier sands, the underlying Cotton Valley Lime reservoirs, and overlying sandstones in the Travis Peak in Freestone County, Texas suggest the presence of either two source facies or distinct periods of gas charge. Gas in the Cotton Valley differs from that in the Bossier and Travis Peak, whereas gas in the Bossier and the Travis Peak may be genetically related. Gas produced from the Cotton Valley Lime is dry, has a C₂₊ hydrocarbon content less than 1.0 percent, and a $\delta^{13}\text{C}$ of methane between -32 and -37 per mil. Shale in the Bossier may serve as both the source of and seal to gas. Gas produced from the Bossier is wet; C₂₊ hydrocarbon content is between 1.5 and 5.5 percent and $\delta^{13}\text{C}$ of methane is between -37 and -40 per mil. Gas from the Travis Peak Formation has C₂₊ hydrocarbon content between 1 and 1.6 percent and $\delta^{13}\text{C}$ of methane around -36 per mil. Analyses of condensates from the Bossier and Travis Peak reservoirs are similar suggesting a genetic affinity and derivation from aromatic kerogen.