

Structure and Stratigraphy of the Calcasieu Lake Salt-Withdrawal Minibasin, Onshore Louisiana

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ABSTRACT

The Calcasieu Lake salt-withdrawal minibasin, central Cameron Parish, Louisiana, forms an E-W elliptical shape of ~15 mi by 10 mi. Complex normal-fault systems occur along the basin's periphery, commonly down-to-the-basin and flanking adjacent salt-cored uplifts, including Hackberry, Big Lake, Sweet Lake and Creole. Calcasieu Lake salt dome, a comparatively small piercement structure, occupies the basin's center. Sub-salt exploration is currently a major play offshore, yet sub-salt production beneath prominent overhangs of the Calcasieu Lake salt dome was established nearly a quarter century ago in October, 1966, producing ~6.0 BCFG and 300 MBO.

Calcasieu Lake minibasin formation was preceded by emplacement of an allochthonous salt sheet into Upper Eocene Jackson strata, probably similar to the modern salt

canopy offshore. Rapid sedimentary loading in the Oligocene caused salt remobilization, forming or enhancing peripheral salt uplifts, and an eventual salt weld to form. The Middle Miocene marked renewed sedimentation and basin formation, likely related to formation of the now-detached Calcasieu Lake salt dome by remobilization of salt from a central residual mound. In particular, a sand-rich depositional sequence, up to 3,000 ft or more in thickness, is confined to the basin itself, without equivalent strata on peripheral highs.

Local upturning of Middle Miocene basinal strata by the Calcasieu Lake salt dome allowed for the sub-salt production at Calcasieu Lake. The paucity of wells drilled along the basin's flanks leaves open many exploration opportunities to test these sand-rich strata as they onlap and pinch-out up the flanks.

