

## **Shale Gas Exploration, Eagle Ford Trend of South Texas: Lessons Learned From a Multi-Well Pilot Program**

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The Eagle Ford has emerged as one of the most prolific shale-gas discoveries in North America. Substantial industry activity and technology have been directed towards understanding this resource play to delineate the productive fairway(s), highlight potential sweet-spots and unlock its economic potential. While the Cretaceous Eagle Ford section is widely distributed across the south Texas Gulf Coast, the overall thickness and internal characteristics of the formation exhibit significant variation. This inherent variability is discussed within the context of regionally distinct structural and depositional settings identified from approximately 2,000 square miles of 3D seismic, over 150 wells with modern log suites, cores and cuttings. This 200 mi (322 km) NE to SW trend was subdivided into distinct pilot areas to assess productivity. We present the results from this regional Eagle Ford exploration project, which includes a continuous two rig drilling program.

Several depositional cycles can be mapped within the Eagle Ford. These crude upward-coarsening packages are capped by regional flooding surfaces, identified from the spectral gamma-ray log, arranged in on-lapping geometries that attain a maximum gross thickness of 250ft. The target interval displays a characteristic log signature, which is correlative across many counties, exhibiting high total porosity (over 10%) and elevated resistivity. These observations are consistent with a thermally mature, hydrocarbon saturated source rock. TOC values from core and cuttings appear uniformly high, averaging 4.5%, but locally can exceed 6%. By contrast, vitrinite reflectance data show much greater variation and correlate well with hydrocarbon yield from production tests. Within the productive fairway, the Eagle Ford exhibits a distinctive carbonate-prone facies, identified from both E-logs and core, where clay content is typically less than 20%. This low clay content is consistent with other established shale plays and may be most analogous to the Haynesville of the central Gulf Coast due to the high carbonate content.

Historically, the Eagle Ford was identified as the primary source for the prolific Austin Chalk and Stuart City Reef trend of south Texas. With advances in drilling and completions technology, industry is unlocking the multi TCF resource potential of deep, over-pressured shale plays. The Eagle Ford is a classic example of a new unconventional play, hidden within a seemingly mature petroleum basin.