
Geochemistry of Eagle Ford Group Source Rocks and Oils from the First Shot Field Area, Texas

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ABSTRACT

Total organic carbon, Rock-Eval pyrolysis, and vitrinite reflectance analyses performed on Eagle Ford Group core and cuttings samples from the First Shot field area, Texas demonstrate these samples have sufficient quantity, quality, and maturity of organic matter to have generated oil. Furthermore, gas chromatography and biomarker analyses performed on Eagle Ford Group oils and source rock extracts as well as weight percent sulfur analyses on the oils indicate the source rock facies for most of the oils are fairly similar. Specifically, these source rock facies vary in lithology from shales to marls, contain elevated levels of sulfur, and were deposited in a marine environment under anoxic conditions. It is these First Shot Eagle Ford source facies that have generated the oils in the First Shot Field. However, in contrast to the generally similar source rock facies and organic matter, maturity varies from early oil window to late oil window in the study area, and these maturity variations have a pronounced effect on both the source rock and oil characteristics. Finally, most of the oils appear to have been generated locally and have not experienced long distance migration.