Reservoir Characterization and Prediction of the Lower Cretaceous Glauconite Member at Jenner-Suffield Field, Alberta, Canada

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ABSTRACT

Significant hydrocarbon reserves at Jenner and Suffield fields of southern Alberta, Canada, occur within the Lower Cretaceous Glauconitic Member of the Upper Mannville Formation. The Glauconitic Member accumulated within fluvial-estuarine environments during transgressive sea level rise following an episode of lowstand paleovalley incisement. Borehole data were used to identify petrofacies within the Glauconitic Member and characterize their controls on reservoir quality, production characteristics, and petrophysical attributes for facies prediction. Analysis of facies-specific core data indicates that the greatest reservoir potential is associated with incised valley filling fluvial Fine and Coarse Channel Sand facies. Gamma ray and density porosity well logs and diagnostic well log patterns were used to generate a semi-quantitative algorithm for Glauconitic facies prediction. A blind test of the predictive algorithm produced 33.1% reproducibility to core observed facies distributions.