

## **Conventional Oil Petroleum System of the Cenomanian-Turonian Blackstone Formation, Ferrier-Willesden Green-Gilby Area, West-Central Alberta, Canada**

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### **Abstract**

The Cretaceous (Cenomanian - Turonian) Blackstone Formation of the Colorado Group in west-central Alberta represents a self-sourced petroleum system with proved light oil production. Although a high-resolution allostratigraphic framework for the Upper and Lower Colorado Group of the foredeep of the Western Canada Sedimentary Basin is documented (Tyagi et al, 2007), the understanding of the Blackstone carbonaceous mudstones in the context of a self-sourced petroleum system remains rudimentary.

The Second White Specks light oil play is hosted within heterolithic carbonaceous mudstone reservoirs of the Blackstone Formation in the central region of a 110 township project area (Twp. 35-45, Rge. 1-10 W5) of west-central Alberta . Historically, exploration results in this play have been inconsistent. The research goal is to characterize the burial history and reservoir properties of this organic-rich mudstone reservoir in order to develop a process-based petroleum system model. The resulting model is intended to provide guidance for exploration and development of a large conventional oil resource play hosted in “hybrid” carbonaceous silty mudstone reservoirs.

The Second White Specks petroleum system model is constrained by a high-frequency allostratigraphic framework constructed using a subsurface dataset of over 2200 wells. Available cores in the Blackstone Formation have been sampled at closely-spaced regular intervals for Rock Eval pyrolysis analyses, supplementing a regional dataset of legacy Rock Eval data. Petromod petroleum system analysis will be integral to modeling the timing and extents of the system. The resulting data is integrated into a reservoir characterization workflow (Cheadle, 2011) which aids in prospect identification.