



The Sun Rises in the East Shale Duvernay

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Summary

The Duvernay is an emerging overpressured shale oil and liquids-rich gas play in the Western Canadian Sedimentary Basin (WSCB). While activity previously focused in the North Shale Basin (Kaybob) condensate window, a new region is emerging. The East Shale Basin (ESB), Figure 1, is becoming a key area of interest with its light oil production and competitive economics. Further delineation has proven high liquids yields, lower well costs and increased confidence in rock quality and maturity. With a price-challenged gas market in Canada, these high liquids yields are especially attractive. Private operators Vesta Energy and Artis Exploration hold the bulk land position in the core of the play. Recent land transactions reflect rising operator interest in the ESB. Crescent Point Energy (CPG) in April 2018 announced a large landholding, and Baytex Energy (BTE) in June 2018 acquired Raging River (RRX) and plans to continue delineating acreage in the basin. Land values jumped from under \$50/acre in 2015 to over \$2,000/acre in 2018.

Method

The ESB differs from the rest of the play as it developed in a sheltered or closed basin, allowing for a thicker section to develop with more carbonate mixed with the shale. Despite the increased carbonate, TOC values remain in the 3-5% range, in line with the rest of the play. In addition, this sub-basin primarily produces light oil (88% liquids). The East Shale Duvernay is much shallower than the rest of the play, leading to costs falling up to 50% below those in the Kaybob Duvernay, Figure 1. However, the shallow depth introduces risk. Updip, the decreasing pressure and increasingly less mature hydrocarbons result in production drop-off. Therefore, there is doubt with how far updip a viable well may be drilled. Operators including CPG and BTE have been testing this limit.

The analysis incorporated data from 2,000 wells with digital logs to produce the geological model. In addition, completion and production data from ~1,000 wells were used to create type curves based on operator, year and region to account for changing geological attributes across the play. A regional stratigraphic and petrophysical model of the Duvernay was generated. Acreage was then subjected to a viability analysis in which the riskier regions in the play were identified.

Results, Observations, Conclusions

This case study analyzes a multidisciplinary data set of geological and engineering data, including digital wireline logs, core and completion data, to determine what is driving the area's early success. The play is compared against L48 analogues to depict how the ESB Duvernay stacks up and where the most prospective areas are located.

References

RSEG
Alberta Energy Regulator

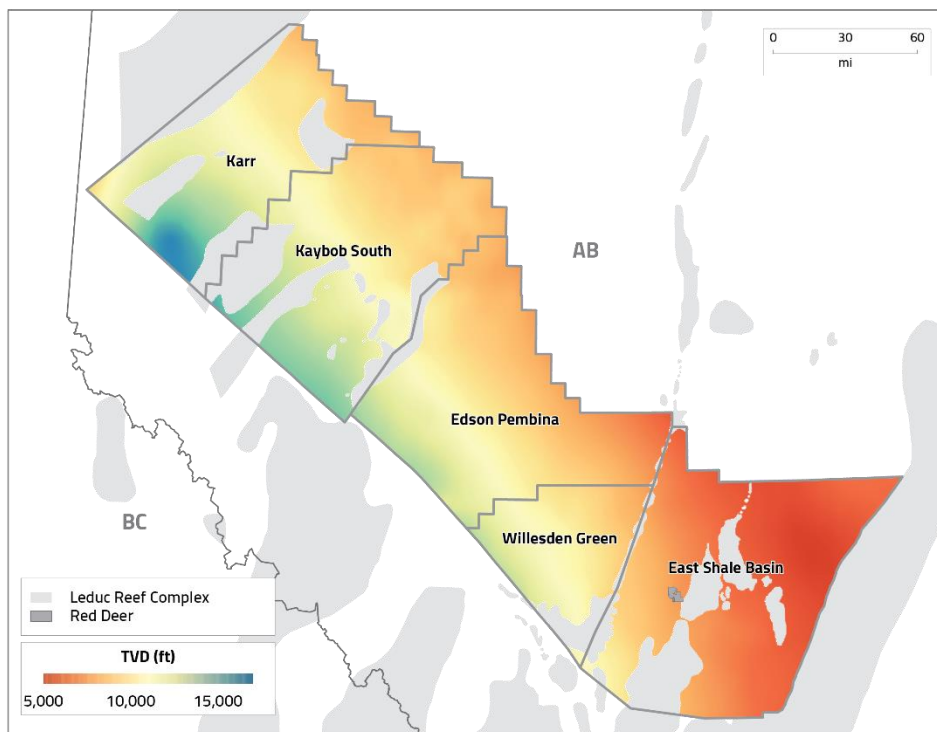


Figure 1 | Duvernay Play With Sub-Basins and Structure Map, Highlighting Shallow Nature of the East Shale Basin.