Comparison of the Geological Controls on the Duvernay between Pembina and Kaybob Sub-Basins

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Abstract

Excitement around the Duvernay has recently gained momentum with record breaking land sales, blockbuster deals, increased well activity, and encouraging well results. Early evaluation of the play was performed in a data poor environment, but since 2009, the environment has evolved, with the availability of modern logs, core analysis, and increasing numbers of well results. Technical evaluation goals have shifted from determining if there is a resource to a focus to how to improve already encouraging results. Within the West Shale Basin of the Duvernay fairway two sub-basins, Kaybob and Pembina have accounted for a majority of industry activity to date. Based on production complied from publically released data, Kaybob well production figures have been, on average, double that of the Pembina.

While the depositional environment for the Duvernay fairway is anoxic deep marine, there is significant variability on a sub-basin level. Variations in depositional environments generate differences in the rock and reservoir in each area. Comparing and contrasting available data between Kaybob and Pembina shows both similarities and differences at the reservoir level. Understanding the parameters controlling rock quality including shale isopach, shale mineralogy, fracturing, and maturity could be key to unlocking the potential in each sub-basin. This talk will review and contrast the reservoir parameters from both sub-basins and how understanding these factors could improve well results in the play.