

## Characterization and Distribution of Lithofacies of the East Duvernay Shale Basin near Elnora/Twining, Alberta Through Core and Log Analysis

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### **Abstract (Poster Presentation)**

The Duvernay Formation is characterized by both heterogeneous lithologies and geomechanical properties which contributes to variable production throughout the basin (Wetering et al. 2016). This project will focus on the East Shale Basin, near the present day Elnora/Twining area. The Duvernay Formation within the study area was deposited within a sub-basin, called the Ghost Pine Embayment bound by the Bashaw Reef complex to the north and west and the Leduc Shelf to the south and east (Knapp et al. 2016). The area of interest is relatively carbonate rich in comparison to the rest of the East Shale Basin (Knapp et al. 2016), and therefore this study serves to determine the influence that this carbonate presence may have on potential production.

The primary focus of this project is a detailed core description on two separate cores; 03-29-033-23W4 and 08-29-031-23W4. The description includes a classification of facies and their relationships within the sequence. This description is supplemented by SRA and XRF from samples taken from zones of interest along the drill core.

The detailed core description is calibrated with wireline logs. Due to rapid facies changes and thin beds the core is used to identify these subtle changes and provide a higher resolution characterization that would not be captured by relatively low resolution wireline logs.

Based on core to log correlation, key log signatures can be compared and contrasted to offset wells in the Ghost Pine Embayment with the goal of mapping the lateral extent of key facies and thus allowing for an interpretation of the stratigraphic framework within the sub-basin. These maps will be used to provide insight into the depositional history and setting, sources for clastic and carbonate sediments, and ultimately identify the most productive units in the sub-basin.

## **Acknowledgements**

Mike Blair, Ian DeWolfe, Scott MacKnight, Per Pedersen, Henry Galvis, Marco Venieri

## **References**

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Wetering NV, Sanei H, Mayer B. 2016. Organic matter characterization in mixed hydrocarbon producing areas within the Duvernay Formation, Western Canada Sedimentary Basin, Alberta. *International Journal of Coal Geology*. 156:1-11. doi:10.1016/j.coal.2016.01.012.