



## ***The relationship of the Canadian Oilsands to the Rocky Mountain Fold and Thrust Belt***

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### **Summary**

The relationship of the Canadian Oilsands to the Rocky Mountain Fold and Thrust Belt Paul A. MacKay Shale Petroleum Ltd. Abstract: The Rocky Mountains rose as a result of tectonic collisions along the western edge of North America, where exotic continental crust accreted to the North American continent. These collisions transmitted stress into the interior of the continent resulting in the uplift of the Canadian Rocky Mountains. For protracted failure to occur over several millions years there must be a strong horizontal stress within the crust that is greater than the vertical stress creating a significant differential stress and also a steady supply of fluid to create high fluid pressures. The fluids for the uplift of the Rocky Mountains are a combination of water from the crust but more importantly hydrocarbons generated from the exceptionally rich source rocks distributed throughout the sedimentary section. As the source rocks matured the expelled hydrocarbons at high fluid pressure estimated to be comparable to the lithostatic gradient. The hydrocarbons were expelled through a complex fracture pattern in a series of pulses that favoured long distance lateral migration into the foreland. Temperature data of exiting oil pools give indications of how this migration occurred. The two main source rock were the Devonian/Mississippian Exshaw Fm. and the Jurassic Nordegg Fm. These two systems created fracture pathway that connect the Oilsands deposit in eastern Alberta to the Rocky Mountains in western Alberta a distance of over 800 kilometres.