

Quantifying the Gas and Liquids in Place and the Flow Characteristics of Shale and other Fine Grained Facies in BC

BC's unconventional gas and hydrocarbon industry is rapidly growing and increasing our understanding of shales as petroleum reservoirs will play a significant contributor to economic development.

Total resource potential of gas shales in BC is estimated to be in the 100s to 1000s of trillions of cubic feet of gas. In addition to this resource there is an unquantified amount of liquid hydrocarbons. The rapid growth of the unconventional shale gas and shale oil industry has outpaced our understanding of the geological processes that determine gas and liquids in place and methods for quantifying flow characteristics of the rocks.

Geoscience BC, in partnership with Chevron, Devon, Husky and Trican, are pleased to announce the launch of a new three-year project led by Dr. Marc Bustin at the University of British Columbia. The research components will help industry understand unconventional liquid resource potential in British Columbia, identify new prospective zones and areas, and help focus exploration and development in BC.

Purpose:

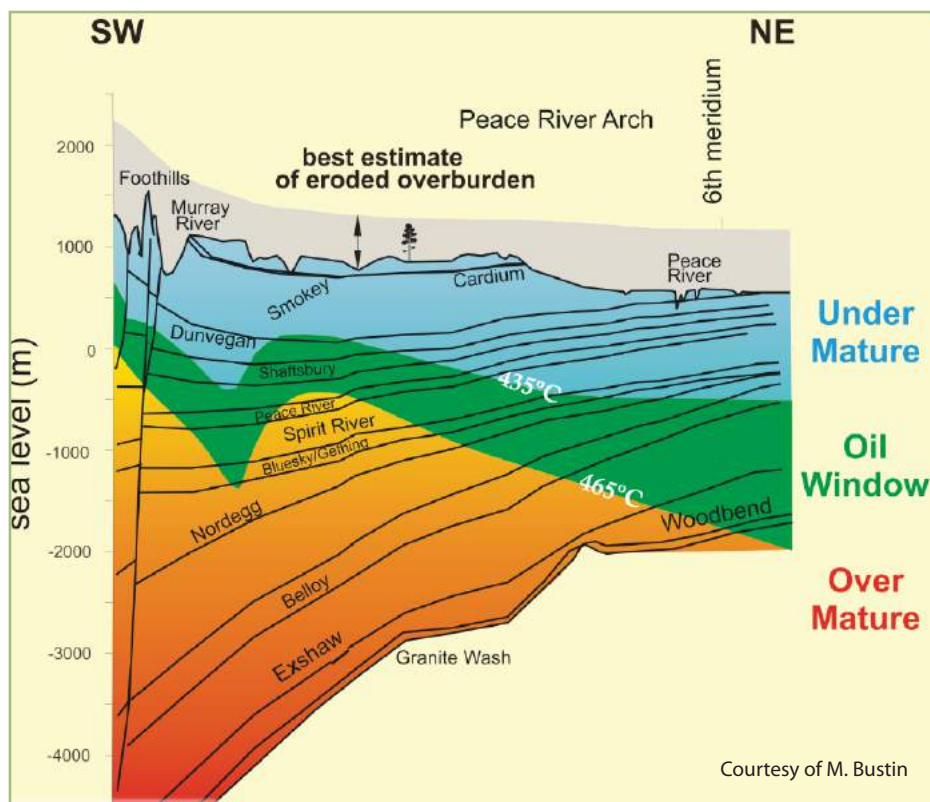
- develop improved methodologies for quantifying gas and liquid in place in gas shale and shale oil reservoirs and measuring matrix flow characteristics (relatively permeability and diffusivity, PVT behavior, etc.)
- quantify the gas and liquids in place and the flow capacities of important shales in Northeast BC using established and newly developed methodologies

Methods:

- innovative methods (in development) that consider the unique aspects of shale oil reservoir pore systems and multiphase flow issues;
- proven methods: isotope analyses, adsorption analyses, organic petrology and chemistry, liquid chemistry and gravity, and mineralogy

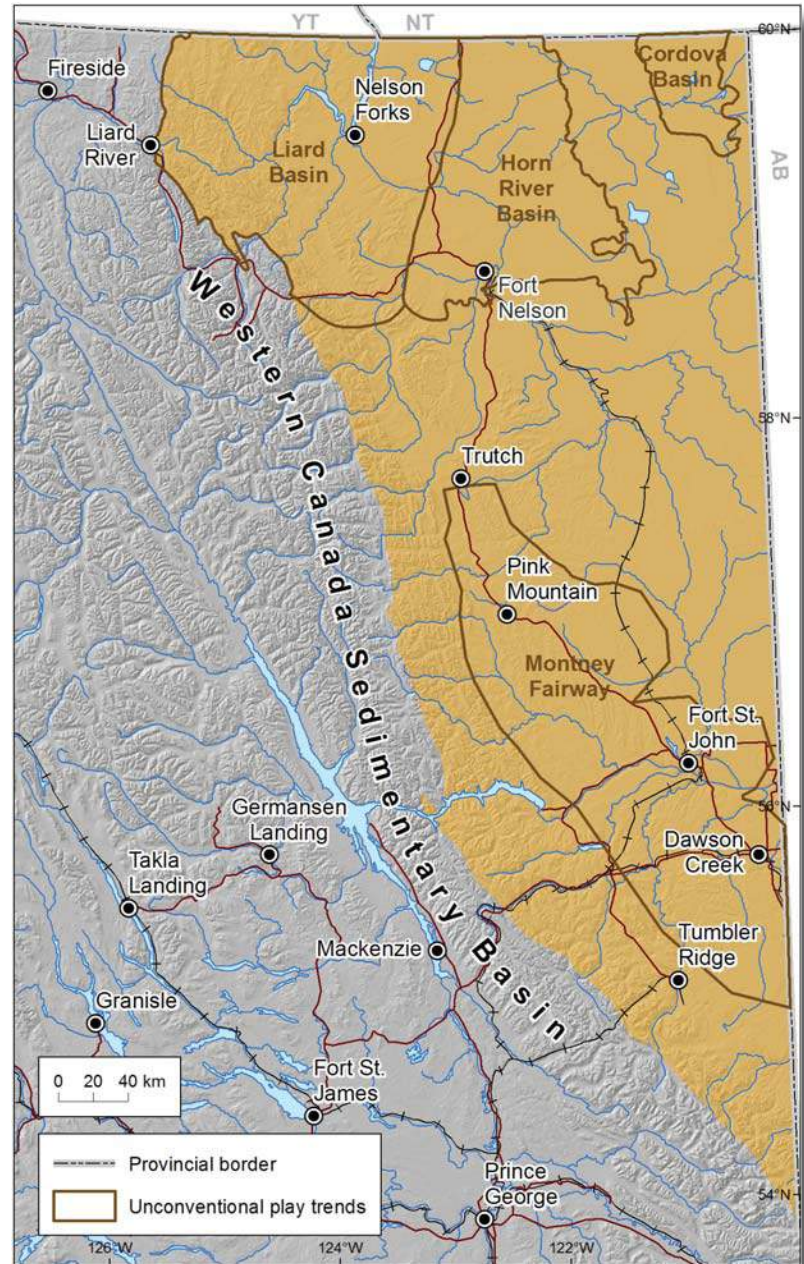
Targeted Study Strata:

- Exshaw
- Doig
- Montney
- Nordegg
- Wilrich



Expected Outcomes:

- mapping of distribution of prospective strata with liquids production potential based on maturity and physical measures of retained hydrocarbons;
- analyses of regional maps in terms of paleodepth of burial, heat flow, etc. in order to define maturity windows;
- measurements of flow characteristics of the shale matrix to reservoir gases and liquids and differentiation of the relative fluxes due to advection and diffusion and relative permeability;
- better correlation between laboratory-based measurements and well logs;
- investigation of the impact of fluids (drilling and fracture fluids) on producibility of the reservoirs (i.e., imbibition, phase blocking, retrograde condensation);
- use of new methods and protocols to target optimal zones for laterals and completion for liquids in NE BC shales.



Northeast British Columbia producing basins within the Western Canadian Sedimentary Basin



Geoscience BC is an industry-led, not-for-profit society with a mandate to collect, interpret and distribute geoscience data and expertise to promote investment in resource exploration and development in British Columbia.

Geoscience BC is funded by the Provincial Government and works in partnership with industry, academia, government, First Nations and communities to attract mineral and oil & gas investment to BC.

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Industry Project Partners

