

STRATIGRAPHY AND RESERVOIR POTENTIAL OF PENNSYLVANIAN-PERMIAN SANDSTONE-GRAINSTONE CYLCES, SVERDRUP BASIN, ARCTIC CANADA

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Located in the Canadian Arctic, the Sverdrup Basin is an important but underexploited Canadian natural resource. Along the southern margin of the Sverdrup Basin, Upper Carboniferous to Lower Permian nearshore to shallow subtidal sandstones interfinger with inner shelf carbonates. Arranged in decameter high-order sequences, these interfingering strata represent glacio-eustatic fluctuations, which hold a unique depositional relationship that can yield potential for the development of hydrocarbon reservoirs. Through examination of sandstone-to-grainstone lateral and vertical transitions in the Blind Fiord area of southwestern Ellesmere Island, rock successions were carefully assessed to document their cyclicity. Petrographic and isotopic analysis (to be conducted in the fall) will further our understanding of micro-facies, diagenetic properties and porosity that may be present within the samples collected.

In general, this study will broaden our understanding of the stratigraphy, sedimentology and depositional environment along the southern margin of the Sverdrup Basin. However, more specifically this study will result in a better understanding of the glacio-eustatic cyclicity in an interfingering clastic-to-carbonate setting and will provide insight on how porosity-enhancement (or destruction) occurs in such a setting. Through elaboration on a number of hydrocarbon play models, this study will be directly applicable to oil and gas exploration, both in the Canadian Arctic and elsewhere as analogues. With the increasing interest and importance of Arctic exploration, this study will provide invaluable insight on the Pennsylvanian-Permian sandstone-grainstone cycles of the Sverdrup Basin.