

Revisiting the Subsurface geology of Sabine Peninsula (Melville British Columbia, Canada Island, Western Arctic) through geostatistically-steered data processing and interpretation

Virginia Brake¹, Mathieu J. Duchesne¹, Keith Dewing², Claprood, M.³, Gloaguen E.³ and Tom Brent²

¹*Geological Survey of Canada, Quebec City, Quebec*

²*Geological Survey of Canada, Calgary, Alberta*

³*Institut National de la Recherche Scientifique, Quebec City, Quebec*

Abstract

The Drake and Hecla gas fields that occur on the Sabine Peninsula of Melville Island are the two largest conventional natural gas fields in Canada and are estimated to contain a combined 8.9 trillion cubic feet of recoverable gas. Modern processing and interpretation methods guided by geostatistical models were applied to more than 3400 line-kilometres of legacy seismic data from onshore Sabine Peninsula. The success of the reprocessing improved the imaging and hence the interpretation of the Devonian through Cretaceous succession. Faults were active repeatedly and control many of the Permian and younger structures. Regional subsurface mapping has identified a number of unconformities and better constrained the relationships between units. The existing discoveries in the region along with the improved understanding of the subsurface lead to the identification of new hydrocarbon plays.