

The Brookian Foredeep: World Class Source Rocks with World Class Unconventional Resource Potential

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The Brookian Foredeep of North Alaska is one of the world's most prolific, oil producing petroleum basins. Great petroleum basins can be characterized and classified in a number of different constructions but all share a common characteristic in the presence and effectiveness of prolific petroleum source rocks. The Brookian Foredeep holds a number of high quality oil prone source rock units that share, in general, a common burial history. Though these source rock units vary in depositional environment and age, basin development and burial history have fortuitously matured and commonly focused migration of expelled products. The regionally extensive Triassic Shublik, Jurassic Kingak and Cretaceous HRZ/Pebble Shale/Hue have delivered more than one hundred billion barrels of oil and tens of trillions cubic feet of gas into conventional petroleum plays along the Barrow Arch.

Recently developed drilling and completion technologies allow these prolific source rocks of the Brookian Foredeep to be evaluated as potential unconventional resource targets. All three source units, perhaps individually but certainly collectively, have the geological attributes to become a major, producing, unconventional resource province through application of modern drilling and completion technologies including lateral, multi-lateral and multi-stage fracture reservoir stimulations. The Shublik Formation has lithologic characteristics that are highly analogous to the Cretaceous Eagle Ford Formation of South Texas, which has set high standards for unconventional play development and productivity. Both the Shublik and the Eagle Ford have regionally extensive, oil prone, organic rich facies units with Total Organic Carbon values exceeding 3%. Both have similar gross lithologic successions including an upwelling margin associated, carbonate and phosphate rich facies in the Shublik that may be particularly beneficial to fracture stimulation completions just as the "false Buda limestone" supports completions in the Eagle Ford.

Development of source rocks as unconventional reservoirs is the concluding punctuation mark in the exploration and development history of a petroleum basin. Fortunately, the global unconventional resource base is vast and technology sourced value drivers remain in early stage development, offering promise for further improvements and additional world class resources for development.