

Sedimentary Basins of Alaska: General Geology and Hydrocarbon Systems

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The complex geologic history of Alaska has provided an environment for the development of a very diverse suite of sediment accumulations. The tectonic settings associated with development of these depocenters include: rift and subsequent passive-margin development, foreland basins associated with thrust belts, fore arc basins, back arc basins, subduction and accretionary wedge systems, and localized subsidence associated with wrench tectonics. The stratigraphic packages developed in these systems are as diverse as the setting in which they were created, and contain numerous source and reservoir combinations that have made Alaska one of the more prolific hydrocarbon provinces in North America. Although exploration for oil and gas has continued at a variable pace for over 100 years, Alaska still remains one of the least explored regions on the continent. The “Barrow Arch” of the North Slope has clearly received the majority of industry attention, for good reason, but has also tended to overshadow the additional potential that is distributed throughout the state. There are numerous reasons why the degree of exploration does not reflect the potential, but the foremost are certainly remoteness and logistical challenges, economic hurdles, and significant environmental sensitivities. This presentation will cover a general overview of the sedimentary basins in both the onshore and offshore regions of Alaska, and will provide a brief description of the dominant hydrocarbon systems active within each basin that are either proven, or likely to be present. This work is a compilation of data and interpretations from numerous authors and incorporates many years of research from both the private and public sector