

### Alaska Peninsula Petroleum Province

**Geology**

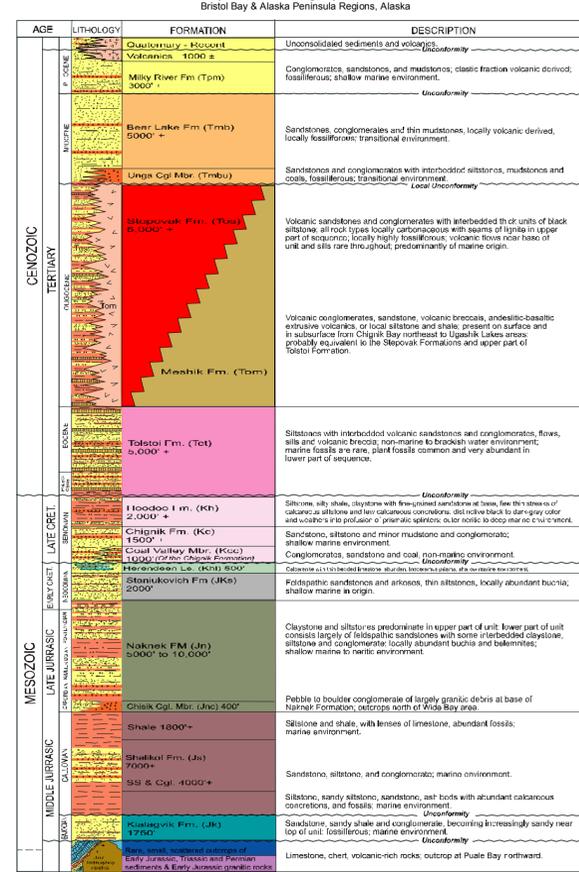
The Alaska Peninsula is approximately 500 miles long and ranges from 25 to 100 miles in width. It represents an active continental margin and volcanic arc contiguous with the Aleutian arc to the southwest. The southeastern half of the peninsula is hilly to mountainous, consisting of gently to moderately folded Mesozoic and Tertiary sedimentary rocks and Quaternary volcanics. The northwestern half of the peninsula is an alluvial-covered lowland underlain, for the most part, by up to 18,000 feet of Tertiary sedimentary rocks that thicken to the west to become the Bristol Bay sedimentary basin. The offshore Bristol Bay basin is a sediment-filled structural depression that underlies a large portion of the continental shelf north of the Alaska Peninsula. In addition to the chain of volcanoes along the peninsula, numerous late Tertiary granitic stocks intrude the sedimentary section in the outcrop belt, but they are not expected to be found under the Bristol Bay lowlands on the northwest.

**Exploration History**

In addition to 8 shallow wells drilled near two different seeps prior to 1925, 18 wildcat wells between 5,000 and 15,000 feet deep have been drilled on the peninsula for either Mesozoic or Tertiary prospects. Many of these wells had significant gas shows both from coal bed methane and thermogenic origins. Oil shows were evident in three wells in the Port Moller region (Pan American Petroleum Corporation David River #1, Gulf Sandy River #1 and Pan American Petroleum Corporation Hoodoo #1). In 1983 ARCO drilled in federal waters the North Aleutian COST #1 well to a depth of 17,000 feet. The most recent well drilled on the Alaska Peninsula is the Amoco Becharof #1 well completed in 1985; the well had significant gas shows in the Tertiary section. No wells to date have flowed commercial quantities of oil.

**Petroleum Potential**

Hydrocarbon potential for the northern coastal plain between Becharof Lake, part way down the peninsula, to a narrow strip of coastline opposite Cold Bay is expected to be moderate to locally high for gas and low to moderate for oil. Conditions are expected to be very good for both structural and stratigraphic traps. Several significant oil and gas seeps are present along the southeastern flank of the peninsula, some of which occur along the crests of large anticlines. Source rock data indicate that most of the Tertiary organic shales are gas prone. The source(s) for the significant oil shows in the Port Moller region are, at present, ill-defined but could be derived from deeper Mesozoic strata. There are adequate sands that could form reservoirs in both the Tertiary and Mesozoic parts of the section. Of special note are sandstones and conglomerates of the Neogene Milky River and Bear Lake formations which have reservoir parameters very capable of supporting oil or gas production. In fact, the greatest geologic risk for the Alaska Peninsula appears to be reservoir quality. Most of the non-marine and marine sandstone units are derived from eroded volcanic and plutonic rock units that upon burial may give rise to pore plugging cements and clays.



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Discrepancies in boundary alignments are the result of merging multiple data sets from a number of different sources. Uncertainty exists in the exact location of the Proposed Alaska Peninsula Areawide Oil and Gas Lease Sale Area boundary with regard to the State of Alaska's 3-mile limit of offshore ownership in this area.