

Stratigraphy and biostratigraphy of Cretaceous and Paleocene strata on the northeast coast of Baffin Island: economic implications for an early and protracted rift history

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The Quqaluit and Cape Searle formations in half-grabens below the Cape Dyer basalts on the northeast coast of Baffin Island show a long history of rifting and sedimentation in Baffin Bay. Quqaluit Formation deposits of tectonically controlled braided and meandering rivers contain spores (*Appendicisporites* and *Trilobosporites*) and pollen (*Tricolpites* and *Retitricolpites*) which indicate an Aptian through early Cenomanian age. Cape Searle rocks are mixed debris flows and volcanic ash. Pollen in these rocks (*Trivestibulopollenites* and *Quercoidites*) indicate an early Paleocene age. The catastrophic deposition of Cape Searle rocks by volcanically induced floods is confined to valleys which formed before the onset of upper Paleocene basalt volcanism.

Valley-fill deposits of early Cretaceous age are widely recognised along the northeast coast of Baffin Island. In the north, these rocks are covered with upper Cretaceous marine strata which have excellent source rock potential. In the south, the lower Cretaceous sandstones are covered with Tertiary volcanic flows. Deeply buried rocks of presumably similar origin lie farther offshore in Davis Strait. If a Cretaceous marine source rock can be found below the Tertiary volcanics in southern Baffin Bay, the potential for hydrocarbons in this area remains good. Half-grabens exposed onshore are likely candidates for exploration models offshore; the hydrocarbon fields on the Labrador shelf are formed in a similar manner.