Baffin Bay, Davies Strait & Labrador Sea. A Summary of Hydrocarbon Geology and Structural Elements - News

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10 years of data acquisition between Greenland and Canada have disclosed several rifts and basins. The sediment fill of rifts and basins are Paleozoic, Mesozoic and Cenozoic, and data indicate working hydrocarbon systems as known onshore Greenland and along the Labrador coast. Major portions of some of the rifts and basins are covered by Expl & Prod licenses. Additional Expl & Prod Licenses may be issued in the ongoing Greenland Baffin Bay License Round. Existing Expl & Prod Licenses have been covered by 2 & 3D seismic surveys and other types of geophysical surveys. Drilling will take place summer 2010 in up to four locations.

There are three principal hydrocarbon plays partly overlapping, partly covering separate basins and rifts. The knowledge of the Paleozoic play is limited to geophysical data and marine samples. The play is known from onshore New Foundland, and Paleozoic sequences are known from outcrops around the area. The Mesozoic play may be divided into Jurassic and Cretaceous plays, but there are only limited knowledge in the marine areas due to very limited drilling. The areal distribution of Mesozoic plays is based on geophysical data, but plays are supported by discovery wells along the Labrador coast and oil seeps onshore Greenland. This is also the case for the Cenozoic system, but burial depth does limit this play to Davies Strait and Baffin Bay.

Basins and rifts were created by northwards drift and anticlockwise rotation of Greenland creating a large divergent opening of the Labrador Sea, divergent strike slip opening of the Davies Strait rifts, and both broad and narrow rifting in the Baffin.

Triassic tectonic opened deep narrow rifts and parallel linear extensional fault zones in the Labrador Sea and in the Davies Strait. Jurassic tectonic was a overlap and continuation of the Triassic system, as is the case for the Cretaceous movements, where additional faults perpendicular to the earlier Mesozoic were created as a consequence of the anticlockwise rotation, as well as a north wards rift continuation into the Baffin Bay.

The main periods of Triassic, Jurassic and Tertiary extension are seen on geophysical data, and main phases of tectonic are supported by ages of dyke swarms in onshore basement.

There is still a lot to learn from geophysical data, but especially from drilling. The main question is however still whether the area holds commercial hydrocarbon accumulations.