Thermal Maturation And Search For Potential Hydrocarbon Source Rocks In The Baffin Basin, Offshore Eastern Canada

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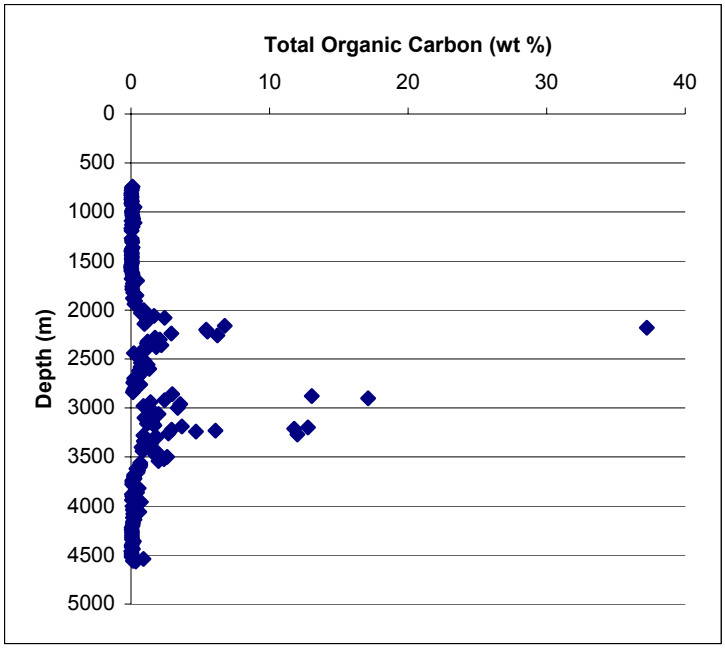
ABSTRACT
A gas and condensate discovery made at Hekja O-72, offshore on the southeast Baffin shelf, has been attributed to migration from a more thermally mature part of the basin. As part of an evaluation of the thermal maturity and source rock potential, cuttings are being analysed for vitrinite reflectance (%Ro profile) and Rock Eval for wells drilled offshore between southern Labrador and Baffin Island. Detailed organic facies analyses and organic geochemical characterization of cuttings extracts are also being completed during this assessment.

Thermal maturity levels at the top of the Hekja and Goja G-37 wells ranges from ~ 0.22 to 0.28 %Ro vitrinite whereas at the base of the wells thermal maturity ranges from 0.55 to 0.72. Rock Eval results indicate that the only organic-enriched potential hydrocarbon source rock is within a zone between 2880 m and 3520 m depth in early to middle Eocene to Late Paleocene (Bujak GSC Open File) coaly sediments and coals in the Hekja 0-72 well. The combination of the thermal maturation levels at total depth/base of the wells and terpene resinite- and liptinite-enriched Type III kerogen suggests that the gas and condensate discovered at Hekja O-72 was likely, at least in part, generated *in situ*, and not necessarily the result of migration as previously stated. Hydrocarbons were discovered from ~ 3250 to 3560 m depth, exactly where the high TOC contents are shown in figure below.


Total Organic Carbon (wt %)
0
10
20
30
40
Depth (m)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000