

Integrated Hydrocarbon Risk Assessment of Deepwater Scotian Slope, Eastern Canada: A Petroleum Systems Approach

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A modified approach of hydrocarbon risk assessment within Deepwater Scotian Slope, Eastern Canada has predicted the presence of four to six viable petroleum systems within turbidite fans and other salt-related reservoirs. Four factors have controlled the variations within the major components (Play Types, Hydrocarbon Charge and Drainage Patterns, and Hydrocarbon Sustainability) of the individual petroleum system: heat flow and basement fractures; reservoir development and source rock kitchens; timing of fluid flow movement within the defined trap; and hydrocarbon survival.

The geochemical fingerprinting of sediments from various DSDP wells on both sides of the Atlantic Ocean and earlier wells drilled within the Scotian Margin, and integrating all components (geological/geophysical, geochemical, and survival) of the Petroleum System Risk Assessment (PSRA) indicate major prospects for natural gas, gas-condensate, and gas hydrates within the Scotian Slope. Recent probabilistic assessment of 12 identified play types within the Scotian Slope by CNSOPB (2002) has indicated a recoverable gas potential of 15-41 Tcf and 1.7-4.7 BB of crude oil. Preliminary PSRA calculations based on petroleum system properties by Global Geoenergy Research Limited predict a greater volume of gas/condensate within the Scotian Slope.
