

The Continental Margin of eastern Canada geological framework and petroleum potential

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The Atlantic-type continental margin of eastern Canada is underlain by a series of Mesozoic-Cenozoic sedimentary basins separated by basement highs or areas of thinner sediments. Regional and salt tectonics have structured the Mesozoic sequence, which is masked by a less-deformed wedge of prograding uppermost Cretaceous and Cenozoic sediments. The basins have been targets of active hydrocarbon exploration for over two decades. Data from 162 exploratory wells and about 600,000 km (372,830 mi) of multichannel seismic coverage have delineated three major geological/geochemical regions.

On the Scotian Shelf, 15 significant (predominantly gas/condensate) discoveries have been made out of 75 wildcats drilled since 1967. Five of the discoveries, including the Venture field, are in an overpressured zone that has been explored extensively only since 1979. No commercial hydrocarbon accumulations have been found in the

southern Grand Banks where 29 wildcats were drilled between 1966 and 1975. The northeastern Grand Banks region has been actively explored by drilling since 1971. The 28 wildcat wells drilled through late 1984 have yielded nine significant (predominantly light oil) discoveries, including the giant Hibernia oil field. Labrador-southeast Baffin Shelf exploration has yielded six gas/condensate discoveries in 28 wildcat wells drilled since 1971.

The Geological Survey of Canada has developed hydrocarbon generation concepts to explain the regional variation in oil and gas occurrence and to assess future potential in terms of the thermal maturity of the source rocks, type of organic material, and time of trap formation. These factors are related to the geologic history of the margin, which is characterized regionally by diachronism in major basin inception and in the resultant stratigraphic record.
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