A. CANADA'S CONTINENTAL MARGINS AND OFFSHORE PETROLEUM EXPLORATION

LABRADOR SHELF

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Deep penetration seismic data show regionally dominant modes in the structure of the continental margin of the western Labrador Sea. A first-order contrast in the structural style of the Cretaceous-Tertiary section exists across the zone of the Grenville front. To the south, Cretaceous-Tertiary subsidence of the shelf-slope region occurred as a gentle tilting relative to a hinge line in the vicinity of the present coast. North from the Grenville front the attitudes of Cretaceous-Tertiary strata indicate that the shelf-slope region subsided relative to a major fault zone near the coast line. The trend of the Gibbs Fracture Zone defines a major discontinuity in the character of the rocks underlying the Cretaceous-Tertiary section. On the continental shelf gently folded strata northeast of Newfoundland are juxtaposed with seismically opaque basement rocks to the south. Seaward from the shelf the Gibbs Fracture Zone forms the northern boundary of a region of broken and foundered continental crust, which includes Orphan Knoll and Flemish Cap as two relatively positive crustal blocks. North of Hudson Strait the landward edge of Cretaceous-Tertiary strata curves northeast, so that a broad expanse of older rocks underlies the shelf off southern Baffin Island. The structure of the southern Baffin shelf is complicated by folds, faults, diapiric structures and the effects of Tertiary volcanism.

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