

Sequence Stratigraphy of the Upper Cretaceous and Tertiary of the Scotian Shelf and Implications for the Scotian Slope

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The Upper Cretaceous and Tertiary sediments of the Scotian Margin form a seaward-thickening wedge over 2 km thick at the shelf edge. Although only sub-economic gas reservoirs have been discovered in this interval on the shelf, greater economic potential probably exists in the area of thickest accumulation on the slope, where it is also associated with extensive salt structures. Knowledge of sediment supply and loading on the slope in this interval will be crucial to understanding the history of hydrocarbon charge, salt mobility, and timing of structural trap formation.

Eight major sequences are recognized within the Upper Cretaceous to Tertiary on the Scotian Shelf. The earlier sequences (Cenomanian to Mid Eocene) are characterized by an alternation of: 1) shelfal chalks (Petrel Member, Wyandot Formation, and an informal Early Eocene chalk unit) developed during times of maximum flooding and 2) sand and mud-dominated clinoform foresets that prograded across the paleoshelf during highstands. A unusual erosion surface formed on top of the chalk of the Wyandot Formation over much of the western and central shelf during the Late Campanian, even near the Sable Subbasin depocentre. Later sequences (Late Eocene through Miocene) are characterized by increasing development of shelf-edge canyon incision and greater amounts of sand. Mapping of the prograding clinoform units and canyon geometry provides important clues to the location and the type of sediment delivered to the slope sedimentary system.