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Framework, Architecture and Exploration Potential of the Tertiary Strata—Offshore, Southwestern Nova Scotia

The recent acquisition by industry partners of several deep-water blocks off the Scotian Shelf has sparked interest in the viability of the virtually unexplored Tertiary strata as an exploration target in the deep water. The area between the Sable Subbasin and George's Bank represents a 330km wide Tertiary depositional subbasin between the slope break and the Scotian Salt Province. This subbasin contains the highest potential for Tertiary deepwater reservoir sands in Nova Scotia.

The Tertiary strata can be grossly subdivided into two sequences. The Paleogene to Early Oligocene represent a relative highstand systems tract setting. Preserved Paleogene sediments on the shelf are represented by highstand prograding delta formations. The deepwater equivalent is represented dominantly by the deposition of muds and marls. A notable Paleocene unconformity in the deepwater is the exception, and is associated with thin sand and silt stringers in the slope and deepwater wells.

A major Chattian unconformity delineates a major shift to a relative lowstand systems tract setting from mid Oligocene time through to present. Several deepcut canyons cannibalising the shelf can be traced down the slope, potentially transporting significant volumes of sand into the deepwater. These lowstand canyons are amalgamated on the shelf but have been exploited multiple times throughout the Oligocene, Miocene and Pleistocene, creating many opportunities for reservoir deposition in the deep water. Detailed seismic facies analysis of the Oligocene to Miocene section shows excellent indications of turbidite deposition from mass transport complexes (MTC) to deep water meandering channel systems.