

In this study, geologic software (e.g., Petrel) was used to interpret the seismic facies, structure, and seismic sequence stratigraphy, and for seismic attribute analysis to interpret the petroleum system. The focus of the study is on seismic inversion that solves for acoustic and elastic properties from the 3D seismic data. Inverting the seismic data to a layer property provides a clearer understanding of the subsurface geology and the potential hydrocarbon reservoirs within the survey area. Seismic inversion was also used to correlate the well logs across the survey area to define the reservoirs of interest. The cored intervals from both wells were studied, examining the characteristics of different lithofacies and their corresponding depositional environments. The lithofacies from the core were tied to the well logs to develop petrophysical facies, and then were tied to the seismic data to define the seismic facies. These new detailed analyses of the stratigraphy, seismic facies, and attributes suggest missed opportunities.

**\*Winner of the Canadian Society of Exploration Geophysicists award for the best geophysical presentation**

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**Seismic stratigraphy and attribute analysis of Mesozoic and Cenozoic geology of the Penobscot area, offshore Nova Scotia\***

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T. CAMPBELL AND G. WACH

*Department of Earth Sciences Dalhousie University, Halifax, Nova Scotia B3H 4R2*

The Penobscot area is located on the Scotian Shelf, northwest of Sable Island within the Scotian Basin, offshore Nova Scotia. The Penobscot dataset comprises a 3D seismic survey, covering 87 km<sup>2</sup>, two well logs (Penobscot L-30 and Penobscot B-41), and cored intervals from both wells. These wells are two of approximately 180 exploratory wells that have been drilled in the Scotian Basin since 1980. Penobscot L-30 and Penobscot B-41 had hydrocarbon shows but did not test enough hydrocarbons to be economic.