

Transgressive seismic stratigraphy of the Eastern Shore, Nova Scotia*R.K. Hall and R. Boyd**Centre for Marine Geology, Dalhousie University, Halifax, N.S. B3H 3J5*

The geomorphology of acoustic basement and the seismic stratigraphy of overlying sediments have been used to determine glacial history and to investigate transgressive sedimentation along an estuarine barrier coastline composed of glacial sediments. This study is based on 400 line kilometers of high resolution seismic data, (uniboom subbottom profiler, side-scan sonar, 3.5 kHz bottom profiler and fathometer), from the Eastern Shore of Nova Scotia, between Hartlen Point and Jeddore Cape.

Where acoustic basement is overlain by sediment, its seismic signature has smooth to rounded features. Where it outcrops, the signature of the acoustic basement is more angular. This variation in the seismic signature is caused by attenuation and/or a gravel lag overlying the outcrop. The overlying sediments have been divided into lower, middle and upper stratigraphic-acoustic units. The lower unit directly overlies the acoustic basement and has a thickness of several meters. In the nearshore area, this lower unit shows a strong internal reflector which is not present offshore. The

top reflector of the lower unit can vary from fairly flat where it outcrops to a hummocky surface where it is overlain by the middle unit. This middle unit has an average thickness of a few meters and shows some internal reflectance where it is draped over irregular surfaces. This unit is acoustically transparent where it becomes a channel fill. Where the upper unit occurs offshore it is seen as a thin layer in-filling basins and channels. Close to shore the upper unit occurs in two distinct layers with a prominent horizontal reflector underlying a low angle wedge-shaped sediment body that thickens toward shore.

The stratigraphy of the study area is similar to the onshore Quaternary sequence found on the Eastern Shore. The acoustic basement is composed of Cambro-Ordovician metasediments of the Meguma Group. The lower and middle stratigraphic-acoustic units appear to represent glacial sediments deposited during the Wisconsinan ice advance. The upper sediment unit is composed of reworked sands and gravels resulting from sea level transgressing over the glacial deposits.