Seismic Stratigraphy of Part of the Upper Nova Scotia Continental Slope

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Fifteen seismic profiles, shot by Petro-Canada and released by COGLA, totalling 350 kms with some well control from Petro-Canada, are being used to study the Late Mesozoic and Cenozoic seismic stratigraphy of part of the upper continental slope of central Nova Scotia. Thirteen seismic lines shot in 1980 by Texaco are closely spaced (about 4 km), migrated, and oriented in a north-south direction. Two additional unmigrated stacked lines shot by Texaco in 1981 in an east-west direction were used to tie the reflectors. The area, covering about 1400 square kms, lies between latitudes 42° 34' to 42° 49' N and longitudes 62° 50' to 63° 30' W. Well logs and cuttings from the Petro-Canada and Texaco Albatross B-13 exploratory well were analyzed.

Five major sequences, defined by seismic unconformities, are present that reveal a general basinward shift and progradation of the paleoslope environment. At the base of the study interval, major unconformity E occurs at the top of the Abenaki platform. It can be traced basinward along the Jurassic(?) paleoslope by onlapping reflectors. It separates carbonates of the Abenaki Formation and their time-equivalents from dominantly clastic sediments above. The overlying Sequence 5 exhibits an updip onlap whose angle over unconformity E progressively increases up the paleoscope. The top of Sequence 5 is a strong seismic event, has considerable relief, and is interpreted as unconformity D.

Sequence 4 overlies unconformity D and exhibits a variety of onlapping seismic facies deposited at the shelf edge that imply Peter Vails's "low stand systems tract." The base of a possible paleoslope may contain a "front-slope-fill facies". Reflectors further upslope onlap the paleoslope at a moderate angle which decreases shoreward. A third facies above has continuous reflectors and blankets the area. The top is prominent erosional unconformity C, as indicated by truncated reflectors.

The seismic reflection configuration of Sequence 3 overlying unconformity C suggests Vail's "high stand systems tract." Its basal termination basinward is a low-angled onlap surface. Above unconformities B and C, Sequence 2 is composed of a variety of facies implying another "low stand systems tract." It is bounded above by unconformity A. Sequence 1, which may be Quaternary in age, is above unconformity A, is wedge-shaped, thins basinward, and has continuous reflectors that are divergent and onlap shoreward.