Chronostratigraphic and Depositional Model for the Middle Jurassic to Neogene Section of the Scotian Shelf, Offshore Eastern Canada

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The Scotian Shelf passive margin sequence is generally characterized by abundant and well-preserved microfossils. Nevertheless, archived well biostratigraphic reports have often provided limited datums and, sometimes, contradictory age interpretations. These older studies principally relied upon palynologic data, even in facies not conducive to palynologic analysis. The only other microfossil data sets generally available are planktonic foraminifer studies of poor quality.

In order to improve stratigraphic resolution, seven wells drilled approximately along strike across the Scotian Shelf were reexamined for nannofossils and foraminifera. No nannofossil or benthic foraminifer data were available in the original well reports. When combined with the pre-existing palynologic datums, this more robust data set resulted in superior biostratigraphic and paleoenvironmental interpretations. The biostratigraphic datums were then calibrated to absolute time via graphic correlation against the proprietary Atlantic Margins Composite Standard Database of the Energy & Geoscience Institute. This age calibration allowed determination of the duration of deposition of discrete sediment packages and depositional facies, as well as the duration of stratigraphic hiatuses. Such a calibration enabled construction of a chronostratigraphic cross-section (Wheeler diagram), overlaid with the facies tied to absolute time. Thus for any time line, the regional distribution of depositional facies and stratigraphic breaks became readily apparent. With this high-resolution stratigraphic and facies control, superior regional sequence stratigraphic and depositional models were then developed for the entire Middle Jurassic through Neogene section.