

Regional Stratigraphy and Characterization of Cretaceous and Tertiary Sandstones, Orphan Basin, Offshore Newfoundland, Canada

Allison Cocker*

Memorial University of Newfoundland, St. John's, NL
allisoncocker@hotmail.com

Summary

The Orphan Basin is a large, under-explored Mesozoic basin located offshore Newfoundland and Labrador along the eastern Canadian margin. This highly attenuated, non-volcanic rift basin formed during the extension, continental break up, and opening of the North Atlantic Ocean.

Well control within the Orphan Basin is sparse, with only seven exploration wells drilled in an area of over 100,000 square kilometers. These wells confirmed the presence of several Tertiary and Cretaceous sediments including several good reservoir quality sandstones. The stratigraphy and correlation of these reservoir intervals within the basin and adjacent basins remains unknown, therefore a detailed analysis of the available data can aid in the geologic understanding of these intervals. The Orphan Basin is connected to the proven petroleum systems of the Flemish Pass Basin and the prolific Jeanne d'Arc Basin and has significant potential for a successful petroleum system. Additional well data from reservoir units within these basins will also provide insight on the regional stratigraphy and direction of sediment transport.

This integrated study involves regional 2D seismic data, well log data, and thin sections from conventional core, sidewall core and cuttings. Interpretation of seismic stratigraphy combined with petrophysics will establish a regional extent and character of the sediments, while sedimentary petrography will aid in characterizing the sandstone intervals and creating a stratigraphic framework for the Orphan Basin. This study aims to provide insight on the origin and distribution of the Cretaceous and Tertiary sandstones in the area, furthering the understanding of regional stratigraphy and sediment transport within the Orphan Basin.