## Regional Cenozoic stratigraphic correlations on the passive margin of the North Atlantic Ocean: comparison between Orphan Basin and the Labrador Margin, Canada

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The extensive passive margin of offshore eastern Newfoundland and Labrador developed during rifting and opening of the North Atlantic Ocean. Rift grabens are typically filled with sediments that exhibit growth against the controlling faults and are draped by laterift and/or postrift units. New age constraints from palynological analyses of Labrador Shelf and Orphan Basin wells, combined with paleoenvironmental and seismic interpretations, have allowed us to make regional stratigraphic correlations in the latest Cretaceous and Cenozoic sections. The Base Tertiary horizon of Orphan Basin is a regional seismic marker of late Maastrichtian-Danian age, and a similaraged maximum flooding surface is observed in a condensed late Maastrichtian section in offshore Labrador. The Gudrid Formation on the Labrador Shelf represents shingled, Paleocene to basal Ypresian forced regressive lobes. A similar shingled package can be recognized along the northern rim of Orphan Basin, where related distal sediments are preserved in Hare Bay E-21. In the middle Eocene of offshore Labrador, the Leif Member of the Kenamu Formation forms a thin sheet of sandstone — a tertiary play for that area. This unit correlates in age to a well-developed shelf-edge delta in Orphan Basin related to a significant regression. Another major regression is documented in offshore Labrador in the lowermost clinoform of the Saglek Formation. New palynological constraints put the age of the base of this unit in the late Rupelian, which correlates with another major shelf-edge delta in Orphan Basin. It is unclear whether the younger Miocene Saglek clinoform of the Labrador margin has a correlative unit in Orphan Basin. However, a major regression is well constrained in Orphan Basin around the Miocene-Pliocene boundary. This section is well preserved in the basin, but was removed across much of the Labrador margin during the Laurentide Glaciation. These correlations show that global sea-level fluctuations are one of the main influences on sedimentation across the two margins, resulting in regional transgressive and regressive events. Local variation related to elevated continental basement blocks, proximity to fluvial discharge, and glacial lowstand erosion, result in stratigraphic variation across the margin; although, key surfaces and packages are similar. Correlations between basins along this vast margin reveal a common geologic evolution in the latest Cretaceous and Cenozoic. This model will extend north into Baffin Bay, where shelf-building packages can be recognized and Neogene stratigraphic intervals are constrained by the ODP 645 well.

> Atlantic Geology, 2017, Volume 53 Atlantic Geoscience Society Abstracts – 43rd Colloquium & Annual General Meeting 2017 doi: 10.4138/atlgeol.2017.006 Copyright © 2019 Atlantic Geology