

# Structural Development of the Humber Arm Allochthon, Port au Port Peninsula, Newfoundland

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Allochthonous turbidite and deep water sedimentary rocks of the Humber Arm Allochthon are found tectonically overlying autochthonous platform strata in the Appalachians of western Newfoundland. These rocks represent remnants of the Cambro-Ordovician Iapetus ocean basin which were thrust onto the adjacent platform margin as part of Appalachian orogenesis. Emplacement of the Humber Arm Allochthon was associated with both a Taconian and an Acadian phase of deformation which collectively placed the maximum westward extremity of the allochthon just offshore of Port au Port Peninsula, an area with renewed interest for hydrocarbon exploration. North of Port au Port Peninsula, geological mapping by previous workers has led to the definition of two stratigraphic successions that are thought to represent both the proximal and distal equivalents of continental slope and rise deposits. In regions where detailed mapping has not been completed, high levels of stratal disruption prevalent within the Humber Arm Allochthon have led to its designation as a mélangé.

Because of their proximity to the deformation front, exposed allochthonous rocks on Port au Port represent the least deformed and metamorphosed portions of the Humber Arm Allochthon and as such provide an opportunity for the study of earlier structures related to allochthon emplacement and how they might influence hydrocarbon migration. Detailed geological mapping of the allochthon on Port au Port Peninsula carried out in this project shows that disruption to the level of mélangé formation is rare. This means that the remaining outcrop, variously disrupted and deemed broken formation, may be assigned to a stratigraphy. Measured sections as well as biostratigraphy are used in this project in order to correlate rocks on Port au Port Peninsula with stratigraphy defined further north. This formation level stratigraphy is then applied to the allochthon on Port au Port Peninsula as the basis for 1:12,500 scale mapping.