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Garden Hill South Oilfield, Western Newfoundland: an Ellenburger Analogue in the Northern Appalachians

Hunt /PanCanadian Port au Port #1 (1995), the first deep well in western Newfoundland, and the first to be drilled on modern seismic, discovered high gravity oil in Middle Ordovician dolomites, equivalent to the Ellenburger of Texas. In 1999, Canadian Imperial Venture Corp. of St. John's, Newfoundland, farmed in and assumed operatorship of the project, with the acquisition of additional seismic data, recompletion of the discovery well, and the drilling of delineation wells. Results to date indicate a major commercial discovery with potential resources in the order of 70 - 130 million barrels of recoverable oil.

Development of a reservoir model has relied on analogies with the Ellenburger play, with porosity developed as a result of both (1) development of middle Ordovician paleokarst, and (2) extensive hydrothermal dolomitization of Devonian-Carboniferous age which exploited the earlier vuggy and cavernous system.

The oil is structurally trapped within a rollover anticline, developed in the footwall of a major regional thrust system. Source rock and seal are provided by allochthonous, deep-water organic facies and their detritus, which now lie immediately above the reservoir rocks. Maturation and migration likely climaxed in late Carboniferous-early Permian time with burial under the Maritimes successor basin clastics.

A new level of understanding of the petroleum system, attained with recent activity at Garden Hill South, has led to better ideas for future exploration in the region.