

Depositional Interpretation and Reservoir Characterization of the Tithonian in Mizzen F-09, Flemish Pass Basin, Canada

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Abstract

The Mizzen structure is located in the Flemish Pass Basin, approximately 450 km east of St. John's Newfoundland, and adjacent to the Flemish Cap (Figure 1a and b). The northern Flemish Pass encompasses an area of 13,500 km², and is a relatively under-explored basin with only 4 wells drilled to date, 3 of which are drilled into the Mizzen structure itself.

The Mizzen Field was discovered in 2010 during the drilling of Mizzen O-16 by Statoil Canada Ltd. and Husky Energy. The structure is defined as a fault-bounded, doubly-plunging horst block, and represents the first significant hydrocarbon accumulation in the Flemish Pass. Mizzen O-16 was drilled near the crest of the structure, and encountered an oil-down-to in sandstone reservoirs of Upper Jurassic (Tithonian) age. This package is informally termed the "Bodhrán Formation", and is time and depositionally equivalent to the Jeanne d'Arc Formation in the Jeanne d'Arc Basin. In mid-2011 Mizzen F-09 was drilled down the north flank to delineate the extent of the oil leg. The F-09 data acquisition program was designed to obtain a full-diameter core in the Ti-3 member (primary reservoir interval) of the Bodhrán Formation, to obtain data to aid in determining the lateral distribution of the reservoir, characterizing the petrophysical parameters, and to provide insights into the nature of the depositional environment. To date, 5 clastic reservoir members (from base to top Ti-0 to Ti-4) have been identified in wells drilled in the Mizzen Field (Figure 1c).