OFFSHORE PROSPECTIVITY OF THE FRENCH WEST INDIES

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ABSTRACT

The West Indies represent the volcanic arc of the Lesser Antilles active margin. Institut Francais du Pétrole has recently performed a petroleum evaluation of sedimentary basins that developed in Tertiary times all around the French islands (Martinique, Guadeloupe, St. Martin and St. Barthelemy). These basins have been recognized and mapped in the 70s and early 80s following several seismic surveys shot by the French industry. Up to several thousand meters thick basins are present around the islands. Some of them are covered by less than 50 m of water, while others can be reached through 1000 to 2000 m of water. The best prospective plays appear to be shallow water carbonates of Paleocene to Miocene age deposited on top of, or laterally with respect to, Paleogene volcanoes. Other potential plays include deeper water carbonates and/or volcanoclastic sandstones. Large structural or stratigraphic traps can be depicted on the seismic. The distribution and quality of potential source rocks are probably the least constrained parameter we have to consider. The only positive indications we can get come from the nearby islands of Puerto Rico and Barbados, where Oligo-Miocene and Eocene source rocks respectively have been described. Because of the present high heat flows encountered across the volcanic arc (average 105 mW/m^2), the top of the oil window could be reached at a depth of only 1700 m, according to 1-D maturation modelling.