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Cuba: An Overview of its Geology, Hydrocarbon Systems and Petroleum Industry

Petroleum production in Cuba dates from 1881 when light oil production was established from Motembo Field in the central part of the island. Cuba currently produces an all-time record of approximately 50,000 bo/d of predominantly heavy crude and 55 MMcf/d of associated natural gas, mainly from a series of fields along a relatively small, 100km stretch of the northern coastline. This limited area of oil and gas production has more to do with ease of logistics and proximity to the main market (Havana) than to prospectivity. The largest of the currently-producing fields is Varadero Field, with an estimated 2 billion barrels of oil in-place. Most of the present-day production comes from fractured Upper Jurassic and Lower Cretaceous carbonate reservoirs (originally part of the Florida-Bahamas platform) in structural traps of the north Cuban deformed belt. Relatively minor production has also been established from fractured serpentinites and other basement rocks. The major hydrocarbon source rocks are probably Upper Jurassic and/or Lower Cretaceous in age. With the application of modern drilling and completion techniques since Cuba opened its E&P sector to foreign participation in the 1990s, recently-drilled wells commonly have sustained production rates above 1,000 bo/d, with some wells reaching 3,000 bo/d. Despite these successes, current production still only meets around 30% of Cuba's domestic demand. There are, however, indications that production and reserves could be significantly greater in the future. In particular, the Cuban sector of the Gulf of Mexico holds great promise as a future petroleum province.