Relationship Among Oil Production, Fractures and Horizontal Drilling in Fractured Carbonate Reservoirs.

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The Heavy Cuban Oil Belt runs along the northern coast of the onshore part of Cuban archipelago and contains giant oil pools with in place reserves of ten thousand million barrels.

The reservoir rocks were deposited in a shallow to deep-water environment of Jurassic to Upper Cretaceous age. These rocks belong to the Bahamas paleo basin.

The paper shows by means of cross sections the development of carbonate sediments belonging to the Placetas Tecto Stratigraphic Unit, showing their complexity, triangle zone and rock varieties, which cover this Tecto Stratigraphic Unit. The cover includes the rocks from the Cretaceous Volcanic Arc. The Cretaceous Volcanic Arc is the main responsible for the strong fracturing carbonate reservoir due to its collision with the Bahamas continental margin during the obduction.

The Placetas carbonate rocks are source rocks as well as reservoir.

A sedimentologic and diagenetic study of the fracturing system shows several stages. The combination of parallel to bedding fractures with vertical ones increases to high degree the permeability and oil production forty times from previous values basically duo to horizontal wells. These wells were drilling across the fracture section.

These new wells produce heavy oil of 12 API degree, 5% sulfur and very high viscosity. The rate production per each well is up to 4000 barrels per day.