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## **New Geologic Model for the Cretaceous Reservoir of the La Concepción Mature Oil Field, Maracaibo Basin, Venezuela**

Discovered in 1948, the Cretaceous reservoir of La Concepción field (Maracaibo basin) has produced 68 MMbbls of oil from 16 wells up until 1997. In 1998 a work program was undertaken, resulting in increased oil rates (2,000 to 17,000 bopd). The main reservoir is composed of an 1,100" thick section of Cretaceous carbonate rocks. New data (3D seismic, new boreholes, 900 ft of one well core, image and production logs, litho-biostratigraphic data, etc) was used in updated field studies.

We established a new structural model based on faulted en echelon folds. The field displays a set of structures caused by strike-slip to wrench tectonics processes. The field is mainly composed of two dextral transpressive relay zones striking NE-SW, forming up-lifted blocks bounded by opposite reverse faults which curve towards each other. The presence of such a relay zone explains the changing dip of folds along the general strike of the structures, and the various fracture directions. The productive fractures strike NW-SE and seem to be linked to contemporary tectonic stress acting in this part of the Maracaibo basin.

Build-up tests exhibit a short radial flow period followed by bilinear flow which can be attributed to the presence of microfissures near the well that are connected to major fractures distant from the well. Analysis of geologic and production data suggests the spatial distribution of productive fracture zones is controlled by a combination of tectonics and stratigraphy.

The new geologic model allowed us to increase reserves by 100 %.