

**AAPG Annual Convention
Salt Lake City, Utah
May 11-14, 2003**

Denis Marchal, Raúl Sanchez, Elmer Ferro, Luis E. Cardozo, Enrique Peralta, and Jose Calderon, Pecom de Venezuela, Caracas, Venezuela

Integrated Structural Model for the Superposed Cretaceous Fractured Carbonate and Eocene Siliciclastic Reservoirs of the La Concepción Field, Western Venezuela

La Concepcion is a mature oilfield located in the Maracaibo Basin, that initiated activities in 1924. The field produces from two different reservoirs superposed in a normal succession: the Cretaceous fractured carbonates of the Cogollo Group (Maraca, Lisure and Apon formations) and the Eocene siliciclastic Misoa Formation. Both reservoirs are separated by non-producing formations (Upper Cretaceous shales and Paleocene sandy limestones) and have been initially interpreted separately. An integrated structural study, mainly based on newly acquired 3-D seismic and re-interpreted well-log data, reveals that both reservoirs are in fact tectonically linked but separated by a thick shaly formation (Late Cretaceous age) which displays a very distinct rheological behavior.

The Cretaceous reservoir is fully mapped with the 3-D seismic data, in contrast, the Eocene reservoir is more difficult to interpret due to its extremely noisy seismic response inside the structure. However, we were able to delineate the internal structure of the Eocene field by mapping the surroundings and to integrate the structural framework with the well-log and pressure data. The new structural model includes faulted en echelon folds generated by transpressive to wrench tectonics processes. The field is mainly composed of two dextral transpressive stepover zones that strike NE-SW.

The integrated structural study of both reservoirs (Eocene and Cretaceous) allowed us to define a coherent structural model that can be used as a guideline for the development of the La Concepción field.