

**AAPG Annual Meeting
March 10-13, 2002
Houston, Texas**

Orlando Campos¹, Jean-Yves Chatellier², Merys D.C. Moreno¹, Fady R. Chaban², Carlos J. Porras¹, Juan Carlos Porras¹ (1) PDVSA Oriente, Puerto La Cruz, Venezuela (2) PDVSA Intevep, Caracas, Venezuela

Integrating Rock Types Based on Capillary Pressure and Lithofacies in Deep Compressive Structures of Norte Monagas - the Problem and some Solutions

The Santa Barbara Field exhibits a large variety of lithofacies and a complex variability in rock quality. Using cores from the Tertiary and Cretaceous sections, a detailed study of the special analyses was combined with a sedimentological study in order to define the major processes responsible for the quality of the reservoirs.

Rock types were determined on the basis of pore-throat radii that were derived using one of Pittman's equations; the selected equation corresponds to R45, which showed the best fit with the laboratory data. Our integration between lithofacies and facies based on mercury injection capillary pressure data showed that some lithofacies have a wide range of petrophysical properties. The cores were reexamined in the light of the type and density of fractures and the type and amount of authigenic cement. Additional work such as cathodoluminescence shed new light into the diagenesis that was not apparent with petrography.

A few processes have been found to alter/overprint the original quality, such as the depth of burial, and the types and intensity of both fracturing and cementation. Although the lithofacies and facies associations allowed the generation of paleogeographic maps and maps of sedimentological trends, they are not sufficient to help us constrain the porosity and permeability maps that are needed for reservoir simulation.

The facies scheme used for the description has been reviewed in the light of our findings. The effects of deep burial diagenesis and tectonic overprints have been tentatively quantified and classified in order to be integrated into the study.