

Shallow Reservoirs and the “Gas-Effect”, Tinta 3 Well: An Oligocene and Eocene Case in Burgos Basin, Mexico

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Burgos Basin covers an area of 50000 km², is located in the west side of Gulf of Mexico and the north east of Republica Mexicana, in Tamaulipas and Nuevo León states mainly. In the last years it has become in the most important non associated gas producing basins of Mexico. Tinta field was discovered in the fifties, it was reactivated with the drilling of the wells Tinta number 3 in 2003 and Tinta number 12 in 2005. The log response for the NPHI and DPHI, from the density (LDL) and neutron (CNL) was amazing, because of the high over crossing, which is called “gas effect” in really shallow sandstone reservoirs, the relevance of this kind of reservoirs is the depth: 125 to 645 m, with good production and rock quality index. This kind of reservoir varies in thickness from 3 to 16 meters and are located in sicciclastic sediments from Eocene and Oligocene, in the formations Jackson, Frio Marino and Frio no Marino. All have good and excellent porosity “ ϕ ” (18 to 34 %) and permeability “k” (1.6 to 825 mD) obtained from cores.

The “gas effect”, Rock Quality Index and mineralogy of this producer sands is described; based on the study of some plugs, cross-plots, petrography images, electronic microscope (SEM) and study from spectroscopy log with cross-plot. The sands have produced gas and condensate and have gas rates from 0.3 to 1.67 mmcf/d, pressure ranges of 400 to 900 psi. The cumulative production oscillates from 0.8 to 4.0 bcf.