

Geological and Seismic Analytical Techniques Permit Prediction of Reservoir and Fluid Type in the Thin Bed D-129 Fm. Pampa del Castillo Field, San Jorge Basin, Argentina

Oscar Antonio Olima and Erlend Guttormsen. UNAS-DGLAM, REPSOL-YPF, Av. Libertador 520-9005 Gral. Mosconi, Comodoro Rivadavia, 9000, Argentina, phone: 54-297-4499000, fax: 54-297-4499000 ext 34744, olimao@repsolypf.com

The San Jorge Basin contains many of the important productive oil fields in Argentina. This is an intracratonic extensional basin located in the central part of Patagonia Terrane. The D-129 Fm is the main source rock of the San Jorge Basin, for this reason the principal studies have been focused on organic intervals, minor attention has been paid to the reservoir potential of the sandstones. The D-129 Fm represents the deposition in a large lacustrine system. The facies assemblage is composed of sandstones and reworked tuffs sedimented in deltas and fluvial channel, oolitic limestones formed in litoral shoals and offshore shale accumulated under a moderate anoxic regimen. This study involves a thorough petrophysical, sedimentological and stratigraphic analysis utilizing wireline logs, cutting sample data and 3D seismic information in order to allow lateral and vertical delineation of productive reservoirs. Volumes of P impedance, S impedance and Density were calculated through a simultaneous inversion process, which is based on the concept of elastic inversion. From these, cubes of VP/VS, Lambda-Rho, Mu-Rho and Poisons ratio were derived. The layer model was visualized in impedance section where the sandstones of D-129 Fm showed distinctive foreset delta geometries pinching out towards basinal shale. Cross-plot analyses of the reservoir interval from D-129 Fm indicates that using the seismic inversion data it is possible to separate oil-bearing sandstones from water-saturated ones.
