WHAT HAVE WE LEARNED FROM PETROPHYSICAL EVALUATION OF THE VACA MUERTA FORMATION DURING THE LAST 7 YEARS OF UNCONVENTIONAL SHALE PLAY EXPLORATION AND DEVELOPMENT?

Abstract:

The Vaca Muerta formation is one of the unconventional shale play reservoirs considered a "world-class reservoir". Its thickness opens the possibility to develop more than one landing zone. Petrophysical and geomechanical evaluations are necessary to identify these landing, however their characterization is complex and have progressed through time gaining complexity and detail. The current petrophysical models resolve nine minerals using the latest technology of electrical logging, this model has been calibrated with core data by implementing multivariable analysis. The calculation of total water and clay bound water with resistivity-free methods was another technical challenge achieved. The formation evaluation with logs also characterize the maturity of hydrocarbon and kerogen. This is because both components represent a large portion of the rock volume in this formation. Today, it is possible also to characterize the variability of the pore and fluid system by analyzing data from Scanning Electron Microscope, Nuclear Magnetic Resonance, and other electrical logs. The interpretation of this information is carried out with multivariable analysis and helps to understand the heterogeneity of the reservoir.

Bio:

Alberto César Ortiz, an independent petrophysicist consultant. He graduated in geology at the University de Córdoba, Argentina. He started in Total Austral in 1997 and three years later he joined Schlumberger as a petrophysics based in Argentina and Brazil focused on formation evaluation using wireline and logging while drilling measurements. In 2011, he joined YPF in Buenos Aires, Argentina and from 2013 to October 2020 was assigned as Petrophysicist in the unconventional shale play reservoir characterization team.