

Unconventional Triple Combo Logs for Accurate Petrophysical Evaluation of Unconventional Shale Reservoirs

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Abstract

Accurate petrophysical evaluation of shale gas and shale oil reservoirs remains a challenge. Complex lithology, coexisting different hydrocarbon types, low porosity, different pore systems, among others add up and require advanced evaluation techniques to be tackled.

In this presentation, the analysis techniques based on logs that were developed for the evaluation of Vaca Muerta reservoir in Argentina will be discussed. These techniques rely on the use of the so-called Unconventional Triple Combo, combining a new spectroscopy tool that provides elemental concentrations and total organic carbon weight fraction (TOC), a dielectric dispersion tool that provides water volume and water phase tortuosity indicator at high resolution, and finally a NMR tool that helps separating liquid and solid hydrocarbon. Interpretation workflow will be presented and illustrated with some application examples.