

Improve Your Petrophysical Evaluation in Mature Fields: New Mineralogical Pulsed Neutron Technology for Case Hole

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Abstract

One of the problems that often occur in mature fields is that the information is insufficient. This may be because the development of these fields happened years ago and logging technology has been improved dramatically lately - often just having a basic set of logs.

Another common situation is to have good information available in the reservoir and evaluate new targets to increase the production the field, not having good information in the new targets.

In this sense a new mineralogical tool for cased hole has been developed by Baker Hughes. The knowledge of the mineralogy is relevant because it is the heart of good petrophysical evaluation.

This tool was originally developed for open hole. It consisted of an open-hole pulsed neutron generator; elemental concentrations can be showed by spectroscopic analysis of the measured gamma rays after applying borehole corrections in open-hole conditions. Proper software allows obtaining lithological and quantitative mineralogical information from the capture and inelastic spectrum. This novel technology in a cased-hole environment implied defining pertinent corrections for casing and cement gamma ray attenuation effects.

This paper shown novel results of the pulsed neutron through-casing technology in the Vaca Muerta formation in one well in the Neuquén Basin, Argentina.

It compares results from openhole and cased hole logging in the same interval of the Vaca Muerta Formation of a well of the companies PELSAs, in the Neuquén Basin. This comparison not only demonstrated agreement in the mineralogy, but also in the determination of total organic carbon (TOC). These results are also in good agreement with XRD analysis.

Although this tool has been tested in Argentina for shale prospects so far, we believed that has great potential for mature fields.