

The Use of Nuclear Magnetic Resonance Logs and Inductives Arrays in Permeability Evaluation.

BREDA, E., Repsol YPF; Adrian Corbelleri, Alberta Energy C;
Carlos Minetto, Baker Atlas.

From all the petrophysical parameters measured, one of the most important is the permeability (k), the intrinsic property from the reservoirs defined as the facility that the rock shows with the one fluid pass. In the oilfield economic analysis it is also the petrophysic factor that affect directly the productivity and efficiency of the hydrocarbons return.

With the advent of the Nuclear Magnetic Resonance (NMR) tool and with the step forward in the high resolution and multiple investigation of inductive instruments, the data acquisition of reservoir characteristics is one of the most important advances in the petrophysical investigation allowing a definition of fluid types and rock quality that we never had before.

The NMR permeability is derived from the T_2 -distribution data. Several equations have been proposed to transform T_2 data to permeability. Regardless of the transform model used, the NMR-derived permeabilities depend on interpretation parameters that may be rock specific. On the other hand, movilities can be deduces from Inductives Arrays with different depths of investigation. The resistivity profile from the filtrate invasion process contains information that can be used to predict how the well would perform under production.

This paper presents methods and the experience adcquired and explains with examples, the characteristic of the reservoirs from San Jorge Basin, that affects the producibility.