QUAD Technology: Using Fluid Induced Porosity Error to Determine Saturations and Porosity

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The oil and gas industry has long been an arena where advances in technology have been the driver behind increased production performance. However, for an industry that began (by modern standards) nearly two centuries ago, a question must be asked for both the past and the present: How far behind the information curve are we on active older wells, is there a way to utilize current advances in technology to increase production in older wells, and on modern wells using "unconventional methods" is there a better way of collecting quality data and petrophysical measurements?

This question (or maybe in some cases problem) has become especially apparent when dealing with aging wells that have fallen behind the curve of advancing technology. The means of identifying bypassed pay in older wells may become problematic when analyzing data from older, less precise technology platforms.

As far as the unconventional shale/ horizontal market, one has to consider the means in which pay is produced. Hydraulic fracturing has unleashed a new and largely untapped resource, thanks to the current prices of oil. In this field though, it may be the case that very little petrophysical data is collected and this can in turn leave unanswered questions. Part of it may have to do with the economics of various types of logging, especially when considering the horizontal market. Conveyance wise the logistics behind conveying the tool will be complicated and cost will always be high due to this. Throw on the risks of potentially losing high end, expensive technology in open hole conditions and many will come to the conclusion that collection of quality porosity, lithology, and saturation data is just not

worth it and move straight to completion.

There has to be an answer to this as lack of data in both old well and new drill markets and a possible option to suit both would be a through pipe logging alternative to open hole problems. That said, a through pipe porosity and saturation tool has been developed. For the purposes of this write up a short discussion on fluid induced porosity errors in various cased hole logging tools will be briefly considered and then taken into further discussions on how these errors can be used to make porosity determinations, flag pay, and calculate saturations.