Using Drilling Data to Characterize Reservoirs

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Abstract

In the world of unconventional horizontal wells, the pace of development and thin margins typically precludes the acquisition of geological or reservoir data from logs that would assist reservoir engineers and geologists. This information is now becoming more and more accessible from an unconventional source, the drilling data. Often overlooked and forgotten once a well has reached TD, there is a plethora of information contained within the drilling data that can guide petrotechnical experts to better understand and adapt their operations to the actual well properties.

In this presentation, we will discuss some of the key insights that can be obtained from drilling data including changes in lithology, inferring rock strength, identifying, and quantifying localized depletion caused by offset producers, fracture detection both natural and induced, and the identification of faults and geohazards. We will also explain how this information can be collected and ultimately used to make decisions on items like optimal drilling target, stacked pay development, well spacing, and the effect of various geohazards.

Several case studies will be presented that demonstrate the accuracy and applicability of this data, with focus on using the data to make actionable decisions, as well as some of the data limitations. At the conclusion of this talk, the importance of incorporating drilling data from every well to improve reservoir knowledge will become evident. Even more so when considering this data is readily available, on every well, and is obtained at a very low or no cost, and with no associated operational risks.

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