TR13

A New Strategy to Explore Tight Oil / Gas Reservoirs Fit for Purpose Acid Fracturing

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SUMMARY

Oil and gas exploration in carbonate reservoirs typically utilize conventional techniques in perforation, matrix acidizing stimulation and well testing. Currently, oil companies have moved to more marginal reservoir targets. Application of these techniques has often yielded disappointing results and tighter zones are often abandoned for more promising target intervals.

With increases in oil and gas production targets, operators are being forced to investigate more marginal reservoir layers for reserves and production potential. The real challenge facing oil industry today is that successful exploration requires a change in drilling, completion and stimulation techniques currently utilized by operators.

Marginal reservoirs can have lots of resource potential and reserves, but may require horizontal well drilling, and/or multiple stage hydraulic fracturing to achieve economic production targets. This type of strategy is more expensive than conventional method(s) and is proven in some circles as potentially risky and many of these risks must be addressed and mitigated. In an effort to reduce risks and costs associated with the exploration process, a new stimulation strategy has been adopted for tight intervals to explore and appraise these intervals using vertical wells prior to going to horizontal wells.

This paper presents and analyzes oil exploration well case study in which a new strategy has been applied and evaluated. The study also demonstrates that this approach can lead to new resource discoveries, better reservoir understanding and improved well and completion design for future appraisal wells. Moreover, the paper highlights some of the additional challenges that this strategy may evoke and shows how these challenges may be overcome in the future.