TITLE: Operational Optimization Treatment model of Hydraulic Fracturing to maximize well profitability.

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ABSTRACT:

Economic optimization of hydraulic fracture treatments allows the production engineer to design a fracture treatment that optimizes the production rate and reserve recovery from a well to maximize well profitability. In addition to this, a good understanding of the key parameters for the fracture treatment can be developed from the optimization study. Designing a fracture treatment entails 3 basic steps: (1) determination of the fracture geometry on the basis of a given set of treatment parameters, (2) estimation of production from the designed fracture geometry, and (3) estimation of net present value for the designed treatment. The cycle can be repeated for different materials or conditions such as other fluids and additive concentrations, injection rates, proppant types and maximum proppant concentrations or even with other geometry models. A set of treatment parameters that gives the highest net present value is considered to be the optimum treatment design. To estimate the cost of a fracturing treatment, the variable costs can be added to some fixed cost not directly associated with treatment size.

This paper will take a detailed and schematic approach to the hydraulic fracturing process and provide a remedy for those unaccounted problems occurring over the production life of a well like low reservoir pressure, proppant degradation, or embedment that results in severe fracture-conductivity impairment by optimizing the fracture treatment and maximizing net present value for a given reservoir condition. It will demonstrate improved hydraulic fracturing design and goal oriented optimum design in conflicting environments. Economical and operational comparison between fractured vertical well and horizontally drilled well to determine future development program