

ABSTRACT

An Algorithm for Hydraulic Fracturing
And Its Application to the Tabaquite Field

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Hydraulic fracture design is quite a complex science. A computer program was written to evaluate and design a hydraulic fracture treatment using a perfect transport fluid. The program was divided into three separate algorithms. The first calculates the sand concentration in the fracture. This is used to ensure that there is sufficient proppant at the wellbore so as to avoid a sandout and also to strike a balance between the cost of the job and the volume of fracturing fluid used. The second program calculates the fluid viscosity using the power law model. The third program calculates the dimensions of a vertically contained fracture using McLeod's [1] method.

The expected productivity increase is calculated using McGuire Sikora's [2] method.

Four (4) wells in TRINTOPEC's Tabaquite field were hydraulically fractured. Data from these four wells were used for this study. A brief discussion on the geology and completion data for these wells are included in the report.

After each job was completed, the actual data was used to evaluate the fracture geometry and the expected productivity increase as predicted by McGuire Sikora. This productivity increase is then compared with that predicted by the Service Company using a model described by Daneshy [25].

It was generally found that the McLeod's method for fracture geometry and the McGuire Sikora's method for productivity increase are quite applicable to TRINTOPEC's Tabaquite field.