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## Analysis of the pressure and productivity characteristics for horizontal fractured well in the tight reservoir based on the three-zones model

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Hydraulic fracturing is a major means to improve gas production which can form multi fractures and complex fracture network. Because of the permeability difference between the fracture network zone and the matrix zone, the composite fracture network system was proposed. We built a three zones coupled composite model to describe the fracture network. I zone indicates fracture network, which contained the major fracture and branch fractures. II zone indicates the shale matrix. Then the unsteady flow model was built and the analytic solution was derived. The model can provide theory basis for shale gas development. The pressure of the three zones and the productivity can be predicted based on the three-zones model. This paper provides a theoretical basis to optimize reasonable development mode such as the hydraulic fracture and the network conductivity, the stimulated reservoir volume and the layout of the well spacing.

### References

- [1]BP, 2015. Energy Outlook 2035. <http://www.bp.com/en/global/corporate/about-bp/energy-economics/energy-outlook/energy-outlook-downloads.html>.
- [2]Mayerhofer M J, Lolon E, Warpinski N R, et al. What is stimulated reservoir volume?[J]. SPE Production & Operations, 2010, 25(01): 89-98.
- [3]Jia Deng, Weiyao Zhu, Qian Ma. A new seepage model for shale gas reservoir and productivity analysis of fractured well [J]. FUEL, 2014, 124: 232–240.
- [4]Brown L P. Pressure transient behavior of the composite reservoir[C]//SPE Annual Technical Conference and Exhibition. Society of Petroleum Engineers, 1985.
- [5]Ambrose R J, Clarkson C R, Youngblood J E, et al. Life-cycle decline curve estimation for tight/shale reservoirs[C]//SPE Hydraulic Fracturing Technology Conference. Society of Petroleum Engineers, 2011.
- [6]Jia DENG, Weiyao ZHU. Study on the Steady and Transient Pressure Characteristics of Shale Gas Reservoirs. Natural Gas Science and Engineering. Volume 24 pp. 210-216. 2015.
- [7]Yun M, Yu B, Cai J. Analysis of seepage characters in fractal porous media[J]. International Journal of Heat & Mass Transfer, 2009, 52(13–14):3272-3278.
- [8]Cai J, Hu X, Standnes D C, et al. An analytical model for spontaneous imbibition in fractal porous media including gravity[J]. Colloids & Surfaces A Physicochemical & Engineering Aspects, 2012, 414(46):228-233.

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