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### Production data analysis techniques for shale gas reservoirs: Comparison study

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There are several methods for production data analysis from shale gas reservoirs. In this study, nine different methods were used to analyze production data from 38 shale gas wells. The objective of this comparison study is to provide guidelines on which methods to use for production data analysis in shale gas wells. These nine methods include Arps' (1945), Fetkovich (1980), Frain and Wattenberger (1987), Modified Hyperbolic (1988), El-Banbi and Wattenbarger (1998), Power Law Decline (2008) and Bello and Wattenbarger (2009). The variations of these methods to cover homogeneous, pseudo-steady state dual porosity, constant pressure and constant rate closed reservoirs are all considered in the comparison. Production data from the 38 wells were categorized into 3 groups to cover the different conditions of observed rate and pressure variation. For every group of wells, half of the production history was history matched with all nine methods and the other half of production history was predicted. The deviation between predicted production forecast and actual production was used to shed light on the applicability of each method of the 9 for the 3 groups of wells. The results indicate that the best constant pressure methods for most of the wells are modified hyperbolic and power law decline with an average absolute error percent of 11% and 12.5%, respectively. In case of constant rate methods, the best method is found to be Bello and Wattenbarger with an average absolute error percent of 15%.

#### Biography

Shams Noeman Mohamed Coutry has completed her Master's Degree in the Reservoir Engineering from Cairo University, Faculty of Engineering. She is a Reservoir Engineer at Tharwa Petroleum Company. She has presented 2 papers in two different conferences. She was a presenter at the MOC 2018.

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