

ABSTRACT**Determination of Dimensionless Flow Rates for a Well in Various Reservoir Configurations**

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This report presents a mathematical model that computes flow rates for a well located in various reservoir configurations.

This analysis is based on two computer programs. The first program calculates the coefficients of a polynomial (maximum degree four) for Matthew, Brons and Hazebroek¹ pressure function curves, using the method of least squares. The second program uses these coefficients, and a modified Van Everdingen and Hurst³ equation, combined with the Stehfest⁴ algorithm, to calculate the flow rates for a specific reservoir shape.

This work presents ;

- (i) A new technique to determine the dimensionless flow rates for a well under constant pressure analysis.
- (ii) Calculated dimensionless flow rates for a well in sixteen different reservoir configurations.