ANALYITCAL DECLINE CURVE ANALYSIS MODEL FOR WATER DRIVE GAS RESERVOIRS

By
Mostafa Sayed Mohamed Abdelkhalek

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
Petroleum Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Under the Supervision of

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FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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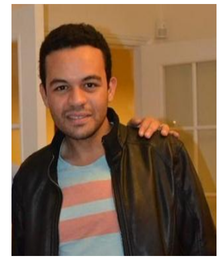

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Title of Thesis:
Analytical Decline Curve Analysis Model for Water Drive Gas Reservoirs

Key Words:
Analytical; Decline; Curve; Analysis; Model

Summary:

Production data analysis is a viable tool for reservoir characterization and estimation of hydrocarbon in place and recoverable reserve. Several methods have been available to analyze production data starting with Arps classical decline curve analysis (DCA) in 1945 all the way to more sophisticated analytical and advanced DCA techniques. Most of these methods are applicable only for volumetric reservoirs. In this study, an analytical DCA model will be presented that takes into account the effect of water influx on gas reservoir performance which can be used to estimate gas in place and analyze reservoir performance.

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Dedication

This thesis is dedicated to the soul of my father who sets the example for me on how to be as a human being.

This thesis is also dedicated to my mother Samira, and my sisters Aida and Zeinab, without their unconditional endless support, help, and encouragement I would not have gone that far not only in this thesis, but also in anything in my life.

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