



Cairo University

ANALYTICAL 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

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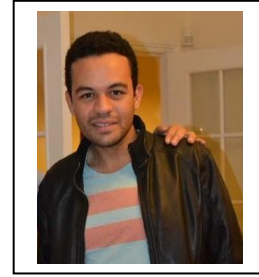
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Title of Thesis:
Analytical Decline Curve Analysis Model for Water Drive Gas Reservoirs

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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Table of Contents

Acknowledgement	i
Acknowledgement	ii
Table of Contents	iii
List of Tables	vi
List of Figures.....	ix
Nomenclature	xii
Abstract	xvi
Chapter 1 : Introduction.....	1
Chapter 2 : Literature Review	3
2.1. Introduction	3
2.2. Development of Decline Curve Analysis.....	3
2.3. Arps Classical Decline Curve Analysis (DCA).....	3
2.3.1. Exponential Decline	4
2.3.2. Hyperbolic Decline	5
2.3.3. Harmonic Decline	5
2.4. Fetkovich Type Curve Analysis	5
2.5. Blasingame et al. Type Curve	7
2.6. Agarwal and Gardner Type Curve.....	10
2.7. Flowing Material Balance	11
2.7.1. Flowing Material Balance for Oil	12
2.7.2. Flowing Material Balance for Gas with Constant Production Rate	13
2.7.3. Flowing Material Balance for Gas with Variable Production Rate.....	14
2.8. Water Influx Models	16
2.9. Summary	16
Chapter 3 : Statement of the Problem and Objectives.....	17
3.1. Statement of the Problem	17
3.2. Objectives.....	17
Chapter 4 : Model Structure and Validation	18
4.1. Introduction	18
4.2. Model Structure and Methodology	19

4.2.1.	The ADCA Model for Oil Reservoirs	19
4.2.2.	The ADCA Model for Gas Reservoirs	19
4.2.3.	Steps for Calculation of Hydrocarbon in Place and Reservoir Pressure	20
4.2.4.	Multiphase Flow Methodology for Gas Rate and Water Rate Calculations.....	20
4.3.	Approach.....	24
4.4.	Model Validation against Classical Material Balance	27
4.4.1.	Validation Case (1)	27
4.4.2.	Validation Case (2)	32
4.4.3.	Validation Case (3)	38
4.4.4.	Validation Case (4)	42
4.5.	Validation against Numerical Reservoir Simulation (NRS)	48
4.6.	Summary	53
Chapter 5 : Field Cases Results and Discussion.....		54
5.1.	Introduction.....	54
5.2.	Field Cases Producing from the Same Reservoir	55
5.2.1.	Field Case Study (1).....	55
5.2.2.	Field Case Study (2).....	59
5.2.3.	Field Case Study (3).....	63
5.2.4.	Field Case Study (4).....	68
5.3.	Field Cases Producing from Different Reservoirs	68
5.3.1.	Field Case Study (5).....	68
5.3.2.	Field Case Study (6).....	72
5.3.3.	Field Case Study (7).....	75
5.3.4.	Field Case Study (8).....	78
5.3.5.	Field Case Study (9).....	82
5.4.	Summary of Results.....	85
Chapter 6 : Conclusions.....		87
6.1.	Conclusions	87
Appendix A : Derivation of the Analytical Decline Curve Analysis Model.....		90
Appendix B : Water Influx Models.....		96
Appendix C : Software Help		105
Appendix D : Model Validation Results		124
Appendix E : Field Cases Results		150

Appendix F : Production Data Analysis for Practical Application	173
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List of Tables

	Page
Table 2-1 Summary of Production Data Analysis Methods	16
Table 4-1 Validation Case 1 - Reservoir Parameters for MBE	27
Table 4-2 Validation Case 1 - Aquifer Parameters for MBE	27
Table 4-3 Validation Case 1 – History Match Results’ Summary for Validation Case (1)	28
Table 4-4 Validation Case 1 – Prediction Results Summary.....	28
Table 4-5 Validation Case 1 - Reservoir Parameters for the Van Everdingen-Hurst Finite Aquifer Model Solution.....	29
Table 4-6 Validation Case 1 - Aquifer Parameters for the Van Everdingen-Hurst Finite Aquifer Model Solution.....	29
Table 4-7 Validation Case 1 - Results Using the Van Everdingen-Hurst Finite Aquifer Model.....	29
Table 4-8 Validation Case 2 - Reservoir Parameters for MBE	32
Table 4-9 Validation Case 2 - Aquifer Parameters for MBE	33
Table 4-10 Validation Case 2 – Results’ Summary for Validation Case (2).....	33
Table 4-11 Validation Case 2 – Prediction Results’ Summary	34
Table 4-12 Validation Case 2 - Reservoir Parameters for Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary	34
Table 4-13 Validation Case 2 - Aquifer Parameters for Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary	35
Table 4-14 Validation Case 2 - Results Using Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary	35
Table 4-15 Validation Case 3 - Reservoir Parameters for MBE.....	38
Table 4-16 Validation Case 3 - Aquifer Parameters for MBE.....	38
Table 4-17 Validation Case 3 - Results Summary for Validation Case (3)	39
Table 4-18 Validation Case 3 - Reservoir Parameters for Fetkovich Bottom Drive Aquifer Model.....	39
Table 4-19 Validation Case 3 - Aquifer Parameters for Fetkovich Bottom Drive Aquifer Model.....	40
Table 4-20 Validation Case 3 - Results Using Fetkovich Bottom Drive Aquifer Model ..	40
Table 4-21 Validation Case 4 - Reservoir Parameters for MBE.....	43
Table 4-22 Aquifer Parameters for MBE	43
Table 4-23 Results Summary for Validation Case (4)	44
Table 4-24 Validation Case 4 – Prediction Results’ Summary	44
Table 4-25 Validation Case 4 - Reservoir Parameters for Fetkovich Radial Aquifer Model with Finite and No Flow Boundary.....	44
Table 4-26 Validation Case 4 - Aquifer Parameters for Fetkovich Radial Aquifer Model with Finite and No Flow Boundary.....	45

Table 4-27 Validation Case 4 - Results Using Fetkovich Radial Aquifer Model with Finite and No Flow Boundary.....	45
Table 4-28 Reservoir Parameters for NRS	48
Table 4-29 Aquifer Parameters for NRS	48
Table 4-30 NRS Case - History Match Results' Summary	49
Table 4-31 NRS Case - Prediction Results Summary	49
Table 4-32 Reservoir Parameters for Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary	49
Table 4-33 Aquifer Parameters for Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary	50
Table 4-34 Results Using Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary.....	50
Table 4-35 Summary of Validation Cases Results.....	53
Table 5-1 Summary of Field Cases Producing from the Same Reservoir	54
Table 5-2 Summary of Field Cases Producing from Different Reservoir	54
Table 5-3 Field Case 1 - Reservoir Parameters for Well (1A)	55
Table 5-4 Field Case 1 – History Match Results' Summary for Field Case (1)	56
Table 5-5 Field Case 1 – Prediction Results' Summary for Field Case (1)	56
Table 5-6 Field Case 1 - Aquifer Parameters for Fetkovich Linear Aquifer with Finite and No Flow Boundary	57
Table 5-7 Field Case 2 - Reservoir Parameters for Well (2A)	59
Table 5-8 Field Case 2 – History Match Results' Summary for Field Case (2)	60
Table 5-9 Field Case 2 – Prediction Results' Summary for Field Case (2)	60
Table 5-10 Field Case 2 - Aquifer Parameters for Pot Aquifer	61
Table 5-11 Field Case 3 - Reservoir Parameters for Well (3A)	64
Table 5-12 Field Case 3 – History Match Results' Summary for Field Case (3)	64
Table 5-13 Field Case 3 – Prediction Results' Summary for Field Case (3).....	65
Table 5-14 Field Case 3 - Aquifer Parameters for Fetkovich Linear Aquifer with Infinite Boundary.....	65
Table 5-15 Field Case 4 - Reservoir Parameters for Well (4A)	68
Table 5-16 Field Case 5 - Reservoir Parameters for Well (1B).....	68
Table 5-17 Field Case 5 – History Match Results' Summary for Field Case (5)	69
Table 5-18 Aquifer Parameters for Fetkovich Bottom Drive Aquifer	69
Table 5-19 Field Case 6 - Reservoir Parameters for Well (2B).....	72
Table 5-20 Field Case 6 – History Match Results' Summary for Field Case (6)	72
Table 5-21 Field Case 6 - Aquifer Parameters for Fetkovich Bottom Drive Aquifer	73
Table 5-22 Field Case 7 - Reservoir Parameters for Well (1C).....	75
Table 5-23 Field Case 7 – History Match Results' Summary for Field Case (7)	76
Table 5-24 Field Case 7 - Aquifer Parameters for Fetkovich Radial Aquifer with Finite and No Flow Boundary.....	76

Table 5-25 Field Case 8 - Reservoir Parameters for Well (1D)	79
Table 5-26 Field Case 7 – History Match Results’ Summary for Field Case (8)	79
Table 5-27 Field Case 8 - Aquifer Parameters for Van Everdingen-Hurst Finite Aquifer	80
Table 5-28 Field Case 9 - Reservoir Parameters for Well (1E)	82
Table 5-29 Field Case 9 – History Match Results’ Summary for Field Case (9)	83
Table 5-30 Field Case 9 - Aquifer Parameters for Fetkovich Radial Aquifer with Infinite Boundary.....	83
Table 5-31 Results Summary of the Field Cases	86

List of Figures

	Page
Figure 2-1 Decline Curve Analysis Categories. Courtesy of Fekete	4
Figure 2-2 Fetkovich Type Curve. Courtesy of KAPPA	6
Figure 2-3 Blasingame Plot. Courtesy of KAPPA.....	8
Figure 2-4 Blasingame Type Curve. Courtesy of KAPPA.....	8
Figure 2-5 Log-Log Plot. Courtesy of KAPPA	9
Figure 2-6 Log-Log Plot, integral of normalized pressure and derivative. Courtesy of KAPPA	10
Figure 2-7 Agarwal and Gardner Plot. Courtesy of KAPPA.....	11
Figure 2-8 Reservoir Pressure Drop for Pseudo Steady State Flow. Courtesy of Fekete	12
Figure 2-9 The Flowing Material Balance for Gas at Constant Production Rate. Courtesy of Fekete	13
Figure 2-10 Variable Rate & Variable Pressure Production Data. Courtesy of Fekete	14
Figure 2-11 Determination of bpss. Courtesy of Fekete	15
Figure 2-12 The Flowing Material Balance for Gas with Variable Production Rate. Courtesy of KAPPA.....	15
Figure 4-1 Analytical Decline curve Analysis Methodology	26
Figure 4-2 Validation Case 1 - Diagnostic Plot Using the Van Everdingen-Hurst Finite Aquifer Model	30
Figure 4-3 Validation Case 1 - Reservoir Pressure Match Using the Van Everdingen-Hurst Finite Aquifer Model	30
Figure 4-4 Validation Case 1 - Gas Saturation Match Using the Van Everdingen-Hurst Finite Aquifer Model	31
Figure 4-5 Validation Case 1 - Gas Rate Match Using the Van Everdingen-Hurst Finite Aquifer Model	31
Figure 4-6 Validation Case 1 - Water Rate Match Using the Van Everdingen-Hurst Finite Aquifer Model	32
Figure 4-7 Validation Case 2 - Diagnostic Plot Using Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary	35
Figure 4-8 Validation Case 2 - Reservoir Pressure Match Using Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary	36
Figure 4-9 Validation Case 2 - Gas Saturation Match Using Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary	37
Figure 4-10 Validation Case 2 - Gas Rate Match Using Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary	37
Figure 4-11 Validation Case 2 - Water Rate Match Using Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary	38
Figure 4-12 Validation Case 3 - Diagnostic Plot Using Fetkovich Bottom Drive Aquifer Model ..	40
Figure 4-13 Validation Case 3 - Reservoir Pressure Match Using Fetkovich Bottom Drive Aquifer Model	41
Figure 4-14 Validation Case 3 - Gas Saturation Match Using Fetkovich Bottom Drive Aquifer Model	41
Figure 4-15 Validation Case 3 - Gas Rate Match Using Fetkovich Bottom Drive Aquifer Model ..	42

Figure 4-16 Validation Case 3 - Water Rate Match Using Fetkovich Bottom Drive Aquifer Model	42
Figure 4-17 Validation Case 4 - Diagnostic Plot Using Fetkovich Radial Aquifer Model with Finite and No Flow Boundary	45
Figure 4-18 Validation Case 4 - Reservoir Pressure Match Using Fetkovich Radial Aquifer Model with Finite and No Flow Boundary.....	46
Figure 4-19 Validation Case 4 - Gas Saturation Match Using Fetkovich Radial Aquifer Model with Finite and No Flow Boundary	46
Figure 4-20 Validation Case 4 - Gas Rate Match Using Fetkovich Radial Aquifer Model with Finite and No Flow Boundary	47
Figure 4-21 Validation Case 4 - Water Rate Match Using Fetkovich Radial Aquifer Model with Finite and No Flow Boundary	47
Figure 4-22 Diagnostic Plot Using Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary	50
Figure 4-23 Reservoir Pressure Match Using Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary.....	51
Figure 4-24 Gas Saturation Match Using Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary	51
Figure 4-25 Gas Rate Match Using Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary	52
Figure 4-26 Water Rate Match Using Fetkovich Radial Aquifer Model with Finite & Constant Pressure Boundary	52
Figure 5-1 Field Case 1 - Diagnostic Plot Using Fetkovich Linear Aquifer with Finite and No Flow Boundary	57
Figure 5-2 Field Case 1 - Reservoir Pressure Match Using Fetkovich Linear Aquifer with Finite and No Flow Boundary	58
Figure 5-3 Field Case 1 - Gas Rate Match Using Fetkovich Linear Aquifer with Finite and No Flow Boundary	58
Figure 5-4 Field Case 1 - Water Rate Match Using Fetkovich Linear Aquifer with Finite and No Flow Boundary	59
Figure 5-5 Field Case 2 – Difficulty to Match Some Data Points	61
Figure 5-6 Field Case 2 –BHFP & Rates Consistency.....	61
Figure 5-7 Field Case 2 - Diagnostic Plot Using Pot Aquifer	62
Figure 5-8 Field Case 2 - Reservoir Pressure Match Using Pot Aquifer.....	62
Figure 5-9 Field Case 2 - Gas Rate Match Using Pot Aquifer	63
Figure 5-10 Field Case 2 - Water Rate Match Using Pot Aquifer	63
Figure 5-11 Field Case 3 - Diagnostic Plot Using Fetkovich Linear Aquifer with Infinite Boundary	66
Figure 5-12 Field Case 3 - Reservoir Pressure Match Using Fetkovich Linear Aquifer with Infinite Boundary	66
Figure 5-13 Field Case 3 - Gas Rate Match Using Fetkovich Linear Aquifer with Infinite Boundary	67
Figure 5-14 Field Case 3 - Water Rate Match Using Fetkovich Linear Aquifer with Infinite Boundary	67

Figure 5-15 Field Case 5 - Diagnostic Plot Using Fetkovich Bottom Drive Aquifer	70
Figure 5-16 Field Case 5 - Reservoir Pressure Match Using Fetkovich Bottom Drive Aquifer	70
Figure 5-17 Field Case 5 - Gas Rate Match Using Fetkovich Bottom Drive Aquifer	71
Figure 5-18 Field Case 5 - Water Rate Match Using Fetkovich Bottom Drive Aquifer	71
Figure 5-19 Field Case 6 - Diagnostic Plot Using Fetkovich Bottom Drive Aquifer	73
Figure 5-20 Field Case 6 - Reservoir Pressure Match Using Fetkovich Bottom Drive Aquifer	74
Figure 5-21 Field Case 6 - Gas Rate Match Using Fetkovich Bottom Drive Aquifer	74
Figure 5-22 Field Case 6 - Water Rate Match Using Fetkovich Bottom Drive Aquifer	75
Figure 5-23 Field Case 7 - Diagnostic Plot Using Fetkovich Radial Aquifer with Finite and No Flow Boundary	77
Figure 5-24 Field Case 7 - Reservoir Pressure Match Using Fetkovich Radial Aquifer with Finite and No Flow Boundary	77
Figure 5-25 Field Case 7 - Gas Rate Match Using Fetkovich Radial Aquifer with Finite and No Flow Boundary	78
Figure 5-26 Field Case 7 - Water Rate Match Using Fetkovich Radial Aquifer with Finite and No Flow Boundary	78
Figure 5-27 Field Case 8 - Diagnostic Plot Using Van Everdingen-Hurst Finite Aquifer	80
Figure 5-28 Field Case 8 - Reservoir Pressure Match Using Van Everdingen-Hurst Finite Aquifer	81
Figure 5-29 Field Case 8 - Gas Rate Match Using Van Everdingen-Hurst Finite Aquifer	81
Figure 5-30 Field Case 8 - Water Rate Match Using Van Everdingen-Hurst Finite Aquifer	82
Figure 5-31 Field Case 9 - Diagnostic Plot Using Fetkovich Radial Aquifer with Infinite Boundary	84
Figure 5-32 Field Case 9 - Reservoir Pressure Match Using Fetkovich Radial Aquifer with Infinite Boundary	84
Figure 5-33 Field Case 9 - Gas Rate Match Using Fetkovich Radial Aquifer with Infinite Boundary	85
Figure 5-34 Field Case 9 - Water Rate Match Using Fetkovich Radial Aquifer with Infinite Boundary	85