

Practical Enhanced Reservoir Engineering

Shale Gas and Tight Oil Reservoir Simulation product guide SUMMER 2008 Petroleum Production Engineering, A Computer-Assisted Approach Practical Petroleum Geochemistry for Exploration and Production Reservoir Engineering Handbook Practical Enhanced Reservoir Engineering Fundamentals of Enhanced Oil and Gas Recovery from Conventional and Unconventional Reservoirs Reservoir Engineering Handbook Modern Chemical Enhanced Oil Recovery Theory and Practice in Microbial Enhanced Oil Recovery Petroleum Reservoir Simulation An Introduction to Reservoir Simulation Using MATLAB/GNU Octave Computer-assisted Reservoir Management The Practice of Reservoir Engineering (Revised Edition) Advanced Reservoir Management and Engineering Basic Applied Reservoir Simulation Applications of Artificial Intelligence Techniques in the Petroleum Industry Reservoir Engineering Techniques Using Fortran Chemical Enhanced Oil Recovery (cEOR) The Petroleum Engineering Handbook: Sustainable Operations Gas Reservoir Engineering Reservoir Engineering Enhanced Oil Recovery in Shale and Tight Reservoirs Advanced Reservoir Engineering Petroleum Reservoir Engineering Practice Practical Reservoir Simulation Reservoir Engineering Models: Analytical and Numerical Approaches Practical Nanotechnology for Petroleum Engineers Practical Petroleum Reservoir Engineering Methods Fundamentals of Applied Reservoir Engineering Principles of Applied Reservoir Simulation Formulas and Calculations for Petroleum Engineering Petroleum Reservoir Simulations Reservoir Engineering of Conventional and Unconventional Petroleum Resources Petrophysics Reservoir Engineering Methods and Applications in Reservoir Geophysics Fundamentals of Coalbed Methane Reservoir Engineering Geothermal Reservoir Engineering Standard Handbook of Petroleum and Natural Gas Engineering:

Shale Gas and Tight Oil Reservoir Simulation

Chapter 1. Fundamentals of Well Testing -- Chapter 2. Decline and Type-Curves Analysis -- Chapter 3. Water Influx -- Chapter 4. Unconventional Gas Reservoirs -- Chapter 5. Performance of Oil Reservoirs -- Chapter 6. Predicting Oil Reservoir Performance -- Chapter 7. Fundamentals of Enhanced Oil Recovery -- Chapter 8. Economic Analysis -- Chapter 9. Analysis of Fixed Capital Investments -- Chapter 10. Advanced Evaluation Approaches -- Chapter 11. Professionalism and Ethics.

product guide SUMMER 2008

Petroleum Production Engineering, A Computer-Assisted Approach

The petroleum geologist and engineer must have a working knowledge of petrophysics in order to find oil reservoirs, devise

the best plan for getting it out of the ground, then start drilling. This book offers the engineer and geologist a manual to accomplish these goals, providing much-needed calculations and formulas on fluid flow, rock properties, and many other topics that are encountered every day. New updated material covers topics that have emerged in the petrochemical industry since 1997. Contains information and calculations that the engineer or geologist must use in daily activities to find oil and devise a plan to get it out of the ground Filled with problems and solutions, perfect for use in undergraduate, graduate, or professional courses Covers real-life problems and cases for the practicing engineer

Practical Petroleum Geochemistry for Exploration and Production

Reservoir Engineering Handbook

This book is a concise but well-organized introduction to nanotechnology (NT) which the upstream oil industry is now vigorously adapting to develop its own unique applications for improved oilfield operations and, oil and gas production. Its reader will learn nanotechnology fundamentals, be introduced to important NT products and applications from other industries and learn about the current state of development of various NT applications in the upstream oil industry, which include innovative use of nanoparticles for enhanced oil recovery; drilling and completions; reservoir sensing; and production operations and flow assurance. Key Features Exclusive title on potential of nanoparticle-based agents and interventions for improving myriad of oilfield operations Unique guide for nanotechnology applications developers and users for oil and gas production Introduces nanotechnology for oil and gas managers and engineers Includes research data discussions relevant to field Offers a practical applications-oriented approach

Practical Enhanced Reservoir Engineering

Practical Petroleum Geochemistry for Exploration and Production provides readers with a single reference that addresses the principle concepts and applications of petroleum geochemistry used in finding, evaluating, and producing petroleum deposits. Today, there are few reference books available on how petroleum geochemistry is applied in exploration and production written specifically for geologists, geophysicists, and petroleum engineers. This book fills that void and is based on training courses that the author has developed over his 37-year career in hydrocarbon exploration and production. Specific topical features include the origin of petroleum, deposition of source rock, hydrocarbon generation, and oil and gas migrations that lead to petroleum accumulations. Also included are descriptions on how these concepts are applied to source rock evaluation, oil-to-oil, and oil-to-source rock correlations, and ways of interpreting natural gas data in exploration work. Finally, a thorough description on the ways petroleum geochemistry can assist in development and production work,

including reservoir continuity, production allocation, and EOR monitoring is presented. Authored by an expert in petroleum geochemistry, this book is the ideal reference for any geoscientist looking for exploration and production content based on extensive field-based research and expertise. Emphasizes the practical application of geochemistry in solving exploration and production problems Features more than 200 illustrations, tables, and diagrams to underscore key concepts Authored by an expert geochemist that has nearly 40 years of experience in field-based research, applications, and instruction Serves as a refresher reference for geochemistry specialists and non-specialists alike

Fundamentals of Enhanced Oil and Gas Recovery from Conventional and Unconventional Reservoirs

Reservoir Engineering Handbook

Petroleum engineering now has its own true classic handbook that reflects the profession's status as a mature major engineering discipline. Formerly titled the Practical Petroleum Engineer's Handbook, by Joseph Zaba and W.T. Doherty (editors), this new, completely updated two-volume set is expanded and revised to give petroleum engineers a comprehensive source of industry standards and engineering practices. It is packed with the key, practical information and data that petroleum engineers rely upon daily. The result of a fifteen-year effort, this handbook covers the gamut of oil and gas engineering topics to provide a reliable source of engineering and reference information for analyzing and solving problems. It also reflects the growing role of natural gas in industrial development by integrating natural gas topics throughout both volumes. More than a dozen leading industry experts-academia and industry-contributed to this two-volume set to provide the best , most comprehensive source of petroleum engineering information available.

Modern Chemical Enhanced Oil Recovery

Shale Gas and Tight Oil Reservoir Simulation delivers the latest research and applications used to better manage and interpret simulating production from shale gas and tight oil reservoirs. Starting with basic fundamentals, the book then includes real field data that will not only generate reliable reserve estimation, but also predict the effective range of reservoir and fracture properties through multiple history matching solutions. Also included are new insights into the numerical modelling of CO₂ injection for enhanced oil recovery in tight oil reservoirs. This information is critical for a better understanding of the impacts of key reservoir properties and complex fractures. Models the well performance of shale gas and tight oil reservoirs with complex fracture geometries Teaches how to perform sensitivity studies, history matching, production forecasts, and economic optimization for shale-gas and tight-oil reservoirs Helps readers investigate data mining

techniques, including the introduction of nonparametric smoothing models

Theory and Practice in Microbial Enhanced Oil Recovery

Petroleum Reservoir Simulation

Presents numerical methods for reservoir simulation, with efficient implementation and examples using widely-used online open-source code, for researchers, professionals and advanced students. This title is also available as Open Access on Cambridge Core.

An Introduction to Reservoir Simulation Using MATLAB/GNU Octave

Annotation Based on a petroleum engineering training course developed for Texaco, this work presents concepts and techniques that the authors believe are useful to optimizing the management of oil and gas reservoirs. Chapter explain the use of desktop software for data acquisition, analysis, and management; well log analysis; seismic data analysis; mapping and data visualization; geostatistical analysis; well test analysis; volumetric method; production performance analyses; decline curve method; reservoir simulation; and material balance method. Annotation c. Book News, Inc., Portland, OR (booknews.com).

Computer-assisted Reservoir Management

Oil Recovery in Shale and Tight Reservoirs delivers a current, state-of-the-art resource for engineers trying to manage unconventional hydrocarbon resources. Going beyond the traditional EOR methods, this book helps readers solve key challenges on the proper methods, technologies and options available. Engineers and researchers will find a systematic list of methods and applications, including gas and water injection, methods to improve liquid recovery, as well as spontaneous and forced imbibition. Rounding out with additional methods, such as air foam drive and energized fluids, this book gives engineers the knowledge they need to tackle the most complex oil and gas assets. Helps readers understand the methods and mechanisms for enhanced oil recovery technology, specifically for shale and tight oil reservoirs Includes available EOR methods, along with recent practical case studies that cover topics like fracturing fluid flow back Teaches additional methods, such as soaking after fracturing, thermal recovery and microbial EOR

The Practice of Reservoir Engineering (Revised Edition)

What makes this book so different and valuable to the engineer is the accompanying software, used by reservoir engineers all over the world every day. The new software, IFLO (replacing WINB4D, in previous editions), is a simulator that the engineer can easily install in a Windows operating environment. IFLO generates simulations of how the well can be tapped and feeds this to the engineer in dynamic 3D perspective. This completely new software is much more functional, with better graphics and more scenarios from which the engineer can generate simulations. **BENEFIT TO THE READER:** This book and software helps the reservoir engineer do his or her job on a daily basis, better, more economically, and more efficiently. Without simulations, the reservoir engineer would not be able to do his or her job at all, and the technology available in this product is far superior to most companies internal simulation software.-

Advanced Reservoir Management and Engineering

"This straightforward introduction to coalbed methane gives insight and detail to industry professionals involved with this unique energy resource. Author John Seidle reviews global and U.S. coals and coalbed methane resources, takes the reader through the fundamentals of coal and its importance to coal gas production, and finishes with a discussion of the calculation of probabilistic coalbed methane reserves and pilot philosophy." "In this long-awaited book, Seidle also examines coal deposits as reservoirs, discusses the physics of gas storage in coal and its production, and covers basic equations of mass balance and production rates, negative decline, simulation of coal gas recovery, and enhanced coalbed methane recovery."--Back cover.

Basic Applied Reservoir Simulation

Fundamentals of Enhanced Oil and Gas Recovery from Conventional and Unconventional Reservoirs delivers the proper foundation on all types of currently utilized and upcoming enhanced oil recovery, including methods used in emerging unconventional reservoirs. Going beyond traditional secondary methods, this reference includes advanced water-based EOR methods which are becoming more popular due to CO₂ injection methods used in EOR and methods specific to target shale oil and gas activity. Rounding out with a chapter devoted to optimizing the application and economy of EOR methods, the book brings reservoir and petroleum engineers up-to-speed on the latest studies to apply. Enhanced oil recovery continues to grow in technology, and with ongoing unconventional reservoir activity underway, enhanced oil recovery methods of many kinds will continue to gain in studies and scientific advancements. Reservoir engineers currently have multiple outlets to gain knowledge and are in need of one product go-to reference. Explains enhanced oil recovery methods, focusing specifically on those used for unconventional reservoirs Includes real-world case studies and examples to further illustrate points Creates a practical and theoretical foundation with multiple contributors from various backgrounds Includes a full range of the latest and future methods for enhanced oil recovery, including chemical, waterflooding, CO₂ injection and

thermal

Applications of Artificial Intelligence Techniques in the Petroleum Industry

Reorganized for easy use, Reservoir Engineering Handbook, Fourth Edition provides an up-to-date reference to the tools, techniques, and science for predicting oil reservoir performance even in the most difficult fields. Topics covered in the handbook include: Processes to enhance production Well modification to maximize oil and gas recovery Completion and evaluation of wells, well testing, and well surveys Reservoir Engineering Handbook, Fourth Edition provides solid information and insight for engineers and students alike on maximizing production from a field in order to obtain the best possible economic return. With this handbook, professionals will find a valuable reference for understanding the key relationships among the different operating variables. Examples contained in this reference demonstrate the performance of processes under forceful conditions through a wide variety of applications. • Fundamental for the advancement of reservoir engineering concepts • Step-by-step field performance calculations • Easy to understand analysis of oil recovery mechanisms • Step-by-step analysis of oil recovery mechanisms • New chapter on fractured reservoirs

Reservoir Engineering Techniques Using Fortran

Publisher's Note: Products purchased from Third Party sellers are not guaranteed by the publisher for quality, authenticity, or access to any online entitlements included with the product. Develop, build, and deploy accurate mathematical models for hydrocarbon reservoirs This practical resource discusses the construction of reservoir models and the implementation of these models in both forward and inverse modes using numerical, analytical, empirical, and artificial intelligence techniques. Written by a pair of experts in the field, Reservoir Engineering Models: Analytical and Numerical Approaches clearly explains the complicated building processes of mathematical models and lays out cutting-edge solution protocols. Advanced chapters teach the assembly of complex physical processes using principles of physics, thermodynamics and mathematics. You will learn to optimize decision-making processes applicable to the management of field development and extraction activities. Coverage includes: •An introduction to reservoir engineering models•Mathematics of reservoir engineering•Reservoir engineering fundamentals•Hydrocarbon fluid models and thermodynamics•Reservoir engineering transport equations•Analytical and numerical reservoir engineering solutions•Proxy and hybrid models in reservoir engineering

Chemical Enhanced Oil Recovery (cEOR)

Formulas and Calculations for Petroleum Engineering unlocks the capability for any petroleum engineering individual,

experienced or not, to solve problems and locate quick answers, eliminating non-productive time spent searching for that right calculation. Enhanced with lab data experiments, practice examples, and a complimentary online software toolbox, the book presents the most convenient and practical reference for all oil and gas phases of a given project. Covering the full spectrum, this reference gives single-point reference to all critical modules, including drilling, production, reservoir engineering, well testing, well logging, enhanced oil recovery, well completion, fracturing, fluid flow, and even petroleum economics. Presents single-point access to all petroleum engineering equations, including calculation of modules covering drilling, completion and fracturing Helps readers understand petroleum economics by including formulas on depreciation rate, cashflow analysis, and the optimum number of development wells

The Petroleum Engineering Handbook: Sustainable Operations

Fundamentals of Applied Reservoir Engineering introduces early career reservoir engineers and those in other oil and gas disciplines to the fundamentals of reservoir engineering. Given that modern reservoir engineering is largely centered on numerical computer simulation and that reservoir engineers in the industry will likely spend much of their professional career building and running such simulators, the book aims to encourage the use of simulated models in an appropriate way and exercising good engineering judgment to start the process for any field by using all available methods, both modern simulators and simple numerical models, to gain an understanding of the basic 'dynamics' of the reservoir -namely what are the major factors that will determine its performance. With the valuable addition of questions and exercises, including online spreadsheets to utilize day-to-day application and bring together the basics of reservoir engineering, coupled with petroleum economics and appraisal and development optimization, Fundamentals of Applied Reservoir Engineering will be an invaluable reference to the industry professional who wishes to understand how reservoirs fundamentally work and to how a reservoir engineer starts the performance process. Covers reservoir appraisal, economics, development planning, and optimization to assist reservoir engineers in their decision-making. Provides appendices on enhanced oil recovery, gas well testing, basic fluid thermodynamics, and mathematical operators to enhance comprehension of the book's main topics. Offers online spreadsheets covering well test analysis, material balance, field aggregation and economic indicators to help today's engineer apply reservoir concepts to practical field data applications. Includes coverage on unconventional resources and heavy oil making it relevant for today's worldwide reservoir activity.

Gas Reservoir Engineering

As nations alike struggle to diversify and secure their power portfolios, geothermal energy, the essentially limitless heat emanating from the earth itself, is being harnessed at an unprecedented rate. For the last 25 years, engineers around the world tasked with taming this raw power have used Geothermal Reservoir Engineering as both a training manual and a

professional reference. This long-awaited second edition of Geothermal Reservoir Engineering is a practical guide to the issues and tasks geothermal engineers encounter in the course of their daily jobs. The book focuses particularly on the evaluation of potential sites and provides detailed guidance on the field management of the power plants built on them. With over 100 pages of new material informed by the breakthroughs of the last 25 years, Geothermal Reservoir Engineering remains the only training tool and professional reference dedicated to advising both new and experienced geothermal reservoir engineers. The only resource available to help geothermal professionals make smart choices in field site selection and reservoir management Practical focus eschews theory and basics- getting right to the heart of the important issues encountered in the field Updates include coverage of advances in EGS (enhanced geothermal systems), well stimulation, well modeling, extensive field histories and preparing data for reservoir simulation Case studies provide cautionary tales and best practices that can only be imparted by a seasoned expert

Reservoir Engineering

Advanced Reservoir Engineering offers the practicing engineer and engineering student a full description, with worked examples, of all of the kinds of reservoir engineering topics that the engineer will use in day-to-day activities. In an industry where there is often a lack of information, this timely volume gives a comprehensive account of the physics of reservoir engineering, a thorough knowledge of which is essential in the petroleum industry for the efficient recovery of hydrocarbons. Chapter one deals exclusively with the theory and practice of transient flow analysis and offers a brief but thorough hands-on guide to gas and oil well testing. Chapter two documents water influx models and their practical applications in conducting comprehensive field studies, widely used throughout the industry. Later chapters include unconventional gas reservoirs and the classical adaptations of the material balance equation. * An essential tool for the petroleum and reservoir engineer, offering information not available anywhere else * Introduces the reader to cutting-edge new developments in Type-Curve Analysis, unconventional gas reservoirs, and gas hydrates * Written by two of the industry's best-known and respected reservoir engineers

Enhanced Oil Recovery in Shale and Tight Reservoirs

Applications of Artificial Intelligence Techniques in the Petroleum Industry gives engineers a critical resource to help them understand the machine learning that will solve specific engineering challenges. The reference begins with fundamentals, covering preprocessing of data, types of intelligent models, and training and optimization algorithms. The book moves on to methodically address artificial intelligence technology and applications by the upstream sector, covering exploration, drilling, reservoir and production engineering. Final sections cover current gaps and future challenges. Teaches how to apply machine learning algorithms that work best in exploration, drilling, reservoir or production engineering Helps readers

increase their existing knowledge on intelligent data modeling, machine learning and artificial intelligence, with foundational chapters covering the preprocessing of data and training on algorithms Provides tactics on how to cover complex projects such as shale gas, tight oils, and other types of unconventional reservoirs with more advanced model input

Advanced Reservoir Engineering

This book provides a clear and basic understanding of the concept of reservoir engineering to professionals and students in the oil and gas industry. The content contains detailed explanations of key theoretic and mathematical concepts and provides readers with the logical ability to approach the various challenges encountered in daily reservoir/field operations for effective reservoir management. Chapters are fully illustrated and contain numerous calculations involving the estimation of hydrocarbon volume in-place, current and abandonment reserves, aquifer models and properties for a particular reservoir/field, the type of energy in the system and evaluation of the strength of the aquifer if present. The book is written in oil field units with detailed solved examples and exercises to enhance practical application. It is useful as a professional reference and for students who are taking applied and advanced reservoir engineering courses in reservoir simulation, enhanced oil recovery and well test analysis.

Petroleum Reservoir Engineering Practice

This is the first book in the petroleum sector that sheds light on the real obstacles to sustainable development and provides solutions to each problem encountered. Each solution is complete with an economic analysis that clarifies why petroleum operations can continue with even greater profit than before while ensuring that the negative environmental impact is diminished. The new screening tools and models proposed in this book will provide one with proper guidelines to achieve true sustainability in both technology development and management of the petroleum sector.

Practical Reservoir Simulation

Reservoir Engineering Models: Analytical and Numerical Approaches

This book uses a descriptive style for carrying out reservoir simulations, written by a seasoned practicing simulation engineer. The author shows how to link geology and simulation input, the most critical aspect of successful reservoir simulation.

Practical Nanotechnology for Petroleum Engineers

Reservoir Engineering focuses on the fundamental concepts related to the development of conventional and unconventional reservoirs and how these concepts are applied in the oil and gas industry to meet both economic and technical challenges. Written in easy to understand language, the book provides valuable information regarding present-day tools, techniques, and technologies and explains best practices on reservoir management and recovery approaches. Various reservoir workflow diagrams presented in the book provide a clear direction to meet the challenges of the profession. As most reservoir engineering decisions are based on reservoir simulation, a chapter is devoted to introduce the topic in lucid fashion. The addition of practical field case studies make Reservoir Engineering a valuable resource for reservoir engineers and other professionals in helping them implement a comprehensive plan to produce oil and gas based on reservoir modeling and economic analysis, execute a development plan, conduct reservoir surveillance on a continuous basis, evaluate reservoir performance, and apply corrective actions as necessary. Connects key reservoir fundamentals to modern engineering applications Bridges the conventional methods to the unconventional, showing the differences between the two processes Offers field case studies and workflow diagrams to help the reservoir professional and student develop and sharpen management skills for both conventional and unconventional reservoirs

Practical Petroleum Reservoir Engineering Methods

The Complete, Up-to-Date, Practical Guide to Modern Petroleum Reservoir Engineering This is a complete, up-to-date guide to the practice of petroleum reservoir engineering, written by one of the world's most experienced professionals. Dr. Nnaemeka Ezekwe covers topics ranging from basic to advanced, focuses on currently acceptable practices and modern techniques, and illuminates key concepts with realistic case histories drawn from decades of working on petroleum reservoirs worldwide. Dr. Ezekwe begins by discussing the sources and applications of basic rock and fluid properties data. Next, he shows how to predict PVT properties of reservoir fluids from correlations and equations of state, and presents core concepts and techniques of reservoir engineering. Using case histories, he illustrates practical diagnostic analysis of reservoir performance, covers essentials of transient well test analysis, and presents leading secondary and enhanced oil recovery methods. Readers will find practical coverage of experience-based procedures for geologic modeling, reservoir characterization, and reservoir simulation. Dr. Ezekwe concludes by presenting a set of simple, practical principles for more effective management of petroleum reservoirs. With Petroleum Reservoir Engineering Practice readers will learn to

- Use the general material balance equation for basic reservoir analysis
- Perform volumetric and graphical calculations of gas or oil reserves
- Analyze pressure transients tests of normal wells, hydraulically fractured wells, and naturally fractured reservoirs
- Apply waterflooding, gasflooding, and other secondary recovery methods
- Screen reservoirs for EOR processes, and implement pilot and field-wide EOR projects.
- Use practical procedures to build and characterize geologic

models, and conduct reservoir simulation • Develop reservoir management strategies based on practical principles Throughout, Dr. Ezekwe combines thorough coverage of analytical calculations and reservoir modeling as powerful tools that can be applied together on most reservoir analyses. Each topic is presented concisely and is supported with copious examples and references. The result is an ideal handbook for practicing engineers, scientists, and managers—and a complete textbook for petroleum engineering students.

Fundamentals of Applied Reservoir Engineering

Practical reservoir engineering techniques have been adequately described in various publications and textbooks, and virtually all useful techniques are suit able for implementation on a digital computer. Computer programs have been written for many of these techniques, but the source programs are usually not available in published form. The purpose of this book is to provide a central source of FORTRAN-coded algorithms for a wide range of conventional reservoir engineering techniques. The book may be used as a supplementary text for courses in practical reservoir engineering. However, the book is primarily intended for practicing reservoir engineers in the hope that the collection of programs provided will greatly facilitate their work. In addition, the book should be also helpful for non-petroleum engineers who are involved in applying the results of reservoir engineering analysis. Sufficient information is provided about each of the techniques to allow the book to be used as a handy reference. ix INTRODUCTION This book provides many of the useful practical reservoir engineering (conventional) techniques used today in the form of FORTRAN codes. The primary objectives have been to provide the simplest possible method for obtaining reliable answers to practical problems. Unfortunately, these codes can usually be applied by simply following a cookbook approach. However, if at all possible, the solutions obtained should be verified and cross-checked by some other means and, most important, should be checked for reasonability.

Principles of Applied Reservoir Simulation

As a reference for the engineer in the field, it offers a new approach using more mathematical models for the engineer to devise his or her own approach to a particular problem."--Jacket.

Formulas and Calculations for Petroleum Engineering

"This book is intended to be a reservoir engineering book for college students, but it is not the usual college text book. It is a modern and very practical guide offering reservoir engineering fundamentals, advanced reservoir related topics, reservoir simulation fundamentals, and problems and case studies from around the world. It is designed to aid students and professionals alike in their active and important roles throughout the reservoir life cycle (discovery, delineation,

development, production, and abandonment), and in the various phases of the reservoir management process (setting strategy, developing plan, implementing, monitoring, evaluating, and completing)."--Publisher's website.

Petroleum Reservoir Simulations

Selection of the optimal recovery method is significantly influenced by economic issues in today's oil and gas markets. Consequently, the development of cost-effective technologies, which bring maximum oil recovery, is the main interest in today's petroleum research communities. Theory and Practice in Microbial Enhanced Oil Recovery provides the fundamentals, latest research and creditable field applications. Microbial Enhanced Oil Recovery (MEOR) is potentially a low-priced and eco-friendly technique in which different microorganisms and their metabolic products are implemented to recover the remaining oil in the reservoir. Despite drastic advantages of MEOR technology, it is still not fully supported in the industry due to lack of knowledge on microbial activities and their complexity of the process. While some selected strategies have demonstrated the feasibility to be used on a mass scale through both lab and field trials, more research remains to implement MEOR into more oil industry practices. This reference delivers comprehensive descriptions on the fundamentals including basic theories on geomicrobiology, experiments and modeling, as well as current tested field applications. Theory and Practice in Microbial Enhanced Oil Recovery gives engineers and researchers the tool needed to stay up to date on this evolving and more sustainable technology. Covers fundamental screening criteria and theories selective plugging and mobility control mechanisms Describes the basic effects on environmental parameters and the mechanics of simulation, including microbial growth kinetics Applies up to date practical applications proven in both the lab and the field

Reservoir Engineering of Conventional and Unconventional Petroleum Resources

Commercial application of chemical enhanced oil recovery (cEOR) processes is expected to grow significantly over the next decade. Thus, Chemical Enhanced Oil Recovery (cEOR): A Practical Overview offers key knowledge and understanding of cEOR processes using an evidence-based approach intended for a broad audience ranging from field operators, researchers, to reservoir engineers dealing with the development and planning of cEOR field applications. This book is structured into three sections; the first section surveys overall EOR processes. The second section focuses on cEOR processes, while the final section describes the electrorheology technology. These sections are presented using a practical and realistic approach tailored for readers looking to improve their knowledge and understanding of cEOR processes in a nutshell.

Petrophysics

This revised edition of the bestselling Practice of Reservoir Engineering has been written for those in the oil industry requiring a working knowledge of how the complex subject of hydrocarbon reservoir engineering can be applied in the field in a practical manner. Containing additions and corrections to the first edition, the book is a simple statement of how to do the job and is particularly suitable for reservoir/production engineers as well as those associated with hydrocarbon recovery. This practical book approaches the basic limitations of reservoir engineering with the basic tenet of science: Occam's Razor, which applies to reservoir engineering to a greater extent than for most physical sciences - if there are two ways to account for a physical phenomenon, it is the simpler that is the more useful. Therefore, simplicity is the theme of this volume. Reservoir and production engineers, geoscientists, petrophysicists, and those involved in the management of oil and gas fields will want this edition.

Reservoir Engineering

Crude oil development and production in U.S. oil reservoirs can include up to three distinct phases: primary, secondary, and tertiary (or enhanced) recovery. During primary recovery, the natural pressure of the reservoir or gravity drive oil into the wellbore, combined with artificial lift techniques (such as pumps) which bring the oil to the surface. But only about 10 percent of a reservoir's original oil in place is typically produced during primary recovery. Secondary recovery techniques to the field's productive life generally by injecting water or gas to displace oil and drive it to a production wellbore, resulting in the recovery of 20 to 40 percent of the original oil in place. In the past two decades, major oil companies and research organizations have conducted extensive theoretical and laboratory EOR (enhanced oil recovery) researches, to include validating pilot and field trials relevant to much needed domestic commercial application, while western countries had terminated such endeavours almost completely due to low oil prices. In recent years, oil demand has soared and now these operations have become more desirable. This book is about the recent developments in the area as well as the technology for enhancing oil recovery. The book provides important case studies related to over one hundred EOR pilot and field applications in a variety of oil fields. These case studies focus on practical problems, underlying theoretical and modelling methods, operational parameters (e.g., injected chemical concentration, slug sizes, flooding schemes and well spacing), solutions and sensitivity studies, and performance optimization strategies. The book strikes an ideal balance between theory and practice, and would be invaluable to academicians and oil company practitioners alike. Updated chemical EOR fundamentals providing clear picture of fundamental concepts Practical cases with problems and solutions providing practical analogues and experiences Actual data regarding ranges of operation parameters providing initial design parameters Step-by-step calculation examples providing practical engineers with convenient procedures

Methods and Applications in Reservoir Geophysics

The job of any reservoir engineer is to maximize production from a field to obtain the best economic return. To do this, the engineer must study the behavior and characteristics of a petroleum reservoir to determine the course of future development and production that will maximize the profit. Fluid flow, rock properties, water and gas coning, and relative permeability are only a few of the concepts that a reservoir engineer must understand to do the job right, and some of the tools of the trade are water influx calculations, lab tests of reservoir fluids, and oil and gas performance calculations. Two new chapters have been added to the first edition to make this book a complete resource for students and professionals in the petroleum industry: Principles of Waterflooding, Vapor-Liquid Phase Equilibria.

Fundamentals of Coalbed Methane Reservoir Engineering

Petroleum Reservoir Simulation, Second Edition, introduces this novel engineering approach for petroleum reservoir modeling and operations simulations. Updated with new exercises, a new glossary and a new chapter on how to create the data to run a simulation, this comprehensive reference presents step-by-step numerical procedures in an easy to understand format. Packed with practical examples and guidelines, this updated edition continues to deliver an essential tool for all petroleum and reservoir engineers. Includes new exercises, a glossary and references Bridges research and practice with guidelines on introducing basic reservoir simulation parameters, such as history matching and decision tree content Helps readers apply knowledge with assistance on how to prepare data files to run a reservoir simulator

Geothermal Reservoir Engineering

Petroleum Production Engineering, A Computer-Assisted Approach provides handy guidelines to designing, analyzing and optimizing petroleum production systems. Broken into four parts, this book covers the full scope of petroleum production engineering, featuring stepwise calculations and computer-based spreadsheet programs. Part one contains discussions of petroleum production engineering fundamentals, empirical models for production decline analysis, and the performance of oil and natural gas wells. Part two presents principles of designing and selecting the main components of petroleum production systems including: well tubing, separation and dehydration systems, liquid pumps, gas compressors, and pipelines for oil and gas transportation. Part three introduces artificial lift methods, including sucker rod pumping systems, gas lift technology, electrical submersible pumps and other artificial lift systems. Part four is comprised of production enhancement techniques including, identifying well problems, designing acidizing jobs, guidelines to hydraulic fracturing and job evaluation techniques, and production optimization techniques. *Provides complete coverage of the latest techniques used for designing and analyzing petroleum production systems *Increases efficiency and addresses common problems by utilizing the computer-based solutions discussed within the book * Presents principles of designing and selecting the main components of petroleum production systems

Standard Handbook of Petroleum and Natural Gas Engineering:

Reservoir Engineering of Conventional and Unconventional Petroleum Resources is a practical guide and handbook for engineers and geoscientists. It is also a complete textbook for teaching of reservoir engineering courses with exercises in each chapter. The sources and applications of basic rock properties are presented. Prediction of PVT properties from correlations and equations of state, and laboratory measurements of same properties from fluid samples are discussed. These basic data are applied in material balance analyses, volumetric calculation of hydrocarbons-in-place and reserves, and analyses of reservoir performance using case histories. Production forecasts for conventional and unconventional reservoirs using Arps' decline equations in decline curve analyses (DCA) are presented. The applications of modified Arps' decline equations coupled with transient flow models in rate transient analyses (RTA) are illustrated. Dr. Ezekwe presents fundamental equations and methods for pressure transient analysis (PTA) for fractured and unfractured wells in conventional reservoirs. This is accompanied with well test analyses in unconventional reservoirs using diagnostic fracture injection tests (DFIT). Secondary recovery methods focused on waterflooding, gasflooding, and low salinity waterflooding are demonstrated. Enhanced oil recovery methods are discussed. Dr. Ezekwe recommends experience-based practical procedures for geologic modeling, reservoir characterization, reservoir simulation, and reservoir management. Fundamental economic decision criteria including profitability index, net present value, rate of return are demonstrated with examples. Reservoir Engineering of Conventional and Unconventional Petroleum Resources equips engineers with knowledge and skills on how to:

- Acquire basic rock and fluid properties
- Predict PVT properties for oil and gas reservoirs from correlations and equations of state
- Perform reserves evaluations for conventional & unconventional reservoirs using DCA methods
- Perform PTA and DFIT analyses for wells in conventional and unconventional reservoirs
- Conduct rate transient analyses (RTA) for unconventional reservoirs
- Implement waterflooding, gasflooding, and low salinity waterflooding projects
- Screen reservoirs for EOR processes and install field-wide EOR projects
- Build geologic models, reservoir models, and conduct reservoir simulation
- Develop and implement reservoir management strategies
- Perform economic evaluation of petroleum projects and resources.
- Build economic models of projects, fields, and resources

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