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Natural gas is playing an increasing role in meeting world energy demands because of its abundance, versatility, and its clean burning nature. Lots of new gas exploration, field development and production activities are under way, especially in places where natural gas until recently was "stranded". Because a significant portion of natural gas reserves worldwide are located across bodies of water, gas transportation in the form of CNG becomes an issue as well. Finally natural gas is viewed in comparison to the recently touted alternatives. Therefore, there is a need for a book covering all the unique aspects and challenges related to natural gas from the upstream to midstream and downstream. All these new aspects are addressed in depth in any existing book. To bridge the gap, Xiuli Wang and Michael Economides have written a new book called *Advanced Natural Gas Reservoir Engineering*. This book will serve as a reference for all engineers and professionals in the energy business. It can also be a textbook for petroleum and chemical engineering curricula and in training departments for a large group of companies.

Presents key concepts and terminology for a multidisciplinary range of topics in petroleum engineering
 Places oil and gas production in a global context
 Introduces all of the key concepts that are needed to understand oil and gas production from exploration through abandonment
 Provides fundamental terminology and concepts from geology, geophysics, petrophysics, drilling, production and reservoir engineering
 Includes many practical examples within each chapter and exercises at the end of each chapter highlight and reinforce material in the chapter
 Includes a glossary for academic adopters

Petroleum Production Engineering, Second Edition, updates both the new and veteran engineer on how to employ day-to-day production techniques to solve real-world challenges with modern technology. Enhanced to include equations and references with today's more complex systems such as horizontal wells, workovers, and an entire new section of chapters dedicated to flow assurance, this go-to reference remains the primary source for answering all upstream and midstream production issues. Completely updated with five sections covering the entire production process including well productivity, equipment and facilities, well stimulation and workover, artificial lift methods, and flow assurance, this updated edition continues to deliver the most practical applied production techniques, answers, and methods for today's production engineer and manager. Updated Excel spreadsheets that cover the most critical production equations from the book are included for download. Updated to cover the latest production challenges, such as flow assurance, horizontal and multi-lateral wells, and workovers. Guides users from theory to practical application with the help of over 50 online Excel spreadsheets that contain basic production equations, such as gas lift potential, multilateral gas well deliverability, and production forecasting. Delivers an all-inclusive product with real-world answers for training or quick look up solutions for the entire production spectrum.

A Systems Approach

Working Guide to Petroleum and Natural Gas Production Engineering

Applied Mechanics Reviews

Fundamentals of Gas Reservoir Engineering

Matriarchy and Power in Africa

Revised and updated to reflect major changes in the field, this second edition presents an integrated and balanced view of current attitudes and practices used in sound economic decision-making for engineering problems encountered in the oil industry. The volume contains many problem-solving examples demonstrating how economic analyses are applied to different facets of the oil industry. Discussion progresses from an introduction to the industry, through principles and techniques of engineering economics, to the application of economic methods to the oil industry. It provides information on the types of crude oils, their finished products and resources of natural gas, and also summarizes worldwide oil production and consumption data.

Natural Gas Reservoir Engineering
 Natural Gas Production Engineering

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.

Handbook of Natural Gas Transmission and Processing

Natural Gas Reservoir Engineering

Natural Gas Production Engineering

Customs Bulletin and Decisions

Petroleum Engineering Handbook for the Practicing Engineer

This second volume of *Surface Operations in Petroleum Production* complements and amplifies Volume I which appeared in 1987 and covered several aspects of oilfield technology. This second volume presents a detailed theoretical and practical exposition of surface oilfield practices, including gas flow rate measurement, cementing, fracturing, acidizing, and gravel packing. In today's era of specialization, these operations are generally left to service companies, denying field engineers and company managers direct detailed knowledge of the specific surface and subsurface operations. This book presents a comprehensive analysis which may be used by field engineers to analyze technical problems, specify the required surface and subsurface operations, and closely supervise the service company's work and post-treatment operation of the well. Another subject which has great economic consequences in all oilfields is corrosion of equipment. The book presents a comprehensive analysis of the theory of corrosion in the oilfield and methods that have proved effective for the retardation, or elimination, of corrosion. Quality control of injection waters is then covered. Three more topics are addressed: the first is offshore technology which is presented with reference to onshore oilfield operations, making a lucid presentation for field engineers who have no practical knowledge of the subject. The second is pollution control - an area of oilfield management which has assumed widespread importance in recent years. The last topic covered is the subject of underground storage of gas and oil. Underground fuel storage and retrieval is an active area of oilfield production management that utilizes the technology presented in this entire treatise. Finally, the technology of testing petroleum products and sample experiments for junior and senior petroleum engineering students are presented. This two-volume comprehensive treatise on modern oilfield technology thus provides not only a complete reference for field managers, engineers, and technical consultants, but will also serve academic needs in advanced studies of petroleum production engineering.

Oil and gas are the most important non-renewable sources of energy. Exploring, producing and managing these resources in compliance with HSE standards are challenging tasks. New technologies, workflows and procedures have to be implemented. This book deals with some of these themes and describes some of the advanced technologies related to the oil and gas industry from HSE to field management issues. Some new technologies for geo-modeling, transient well testing and digital rock physics are also introduced. There are many more technical

topics to be addressed in future books. This book is aimed at researchers, petroleum engineers, geoscientists and people working within the petroleum industry.

Wax Deposition: Experimental Characterizations, Theoretical Modeling, and Field Practices covers the entire spectrum of knowledge on wax deposition. The book delivers a detailed description of the thermodynamic and transport theories for wax deposition modeling as well as a comprehensive review of laboratory testing for the establishment of appropriate field control strategies. Offering valuable insight from academic research and the flow assurance industry, this balanced text: Discusses the background of wax deposition, including the cause of the phenomenon, the magnitude of the problem, and its impact on petroleum production Introduces laboratory techniques and theoretical models to measure and predict key parameters of wax precipitation, such as the wax appearance temperature and the wax precipitation curve Explains how to conduct and interpret laboratory experiments to benchmark different wax deposition models, to better understand wax deposition behaviors, and to predict wax deposit growth for the field Presents various models for wax deposition, analyzing the advantages and disadvantages of each and evaluating the differences between the assumptions used Provides numerous examples of how field management strategies for wax deposition can be established based on laboratory testing and modeling work Wax Deposition: Experimental Characterizations, Theoretical Modeling, and Field aids flow assurance engineers in identifying the severity and controlling the problem of wax deposition. The book also shows students and researchers how fundamental principles of thermodynamics, heat, and mass transfer can be applied to solve a problem common to the petroleum industry.

Advanced Natural Gas Engineering

Well Productivity Handbook

New Technologies in the Oil and Gas Industry

Regulations, Rulings, Decisions, and Notices Concerning Customs and Related Matters of the United States Court of Customs and Patent

Appeals and the United States Customs Court

Cases Adjudged in the United States Court of International Trade

"Natural gas is rapidly emerging as a premier fuel for the world economy with markedly increasing trans-national trade. With proven reserves far exceeding those for crude oil, natural gas is likely to be around for centuries. This is a book about enhancing natural gas production using one of the most important and widespread well completion technologies -- hydraulic fracturing. The book addresses the way that natural gas is produced from reservoirs and then describes diagnostic techniques that can pinpoint whether the well is producing as it should or whether intervention should be undertaken, which is the central theme of this book."--Back cover.

The demand for energy consumption is increasing rapidly. To avoid the impending energy crunch, more producers are switching from oil to natural gas. While natural gas engineering is well documented through many sources, the computer applications that provide a crucial role in engineering design and analysis are not well published, and emerging technologies, such as shale gas drilling, are generating more advanced applications for engineers to utilize on the job. To keep producers updated, Boyun Guo and Ali Ghalambor have enhanced their best-selling manual, Natural Gas Engineering Handbook, to continue to provide upcoming and practicing engineers the full scope of natural gas engineering with a computer-assisted approach. This must-have handbook includes: A focus on real-world essentials rather than theory Illustrative examples throughout the text Working spreadsheet programs for all the engineering calculations on a free and easy to use companion site Exercise problems at the end of every chapter, including newly added questions utilizing the spreadsheet programs Expanded sections covering today's technologies, such as multi-fractured horizontal wells and shale gas wells

Designed for undergraduates in petroleum engineering and geology programs, this basic textbook examines the techniques involved in the economic evaluation of oil and gas producing properties and drilling prospects. Presenting practical methods, reinforced by numerous examples for analyzing decisions concerning investment in the oil and gas industry, this timely work treats such areas as volumetric estimates, material balance estimates, the concept of time-value of money, profit indicators and their advantages and disadvantages, risk and uncertainty, and more.

Greenhouse Gas Carbon Dioxide Mitigation

Advanced Reservoir Engineering

Natural Gas Engineering Handbook

Economic Analysis and Investment Decisions

Strategy, Regulation, and Some Competitive Implications

Aneji Eko was technically illiterate, but she represents a resource for understanding the complexities of African and Nigerian cultures. This is an account of matriarchy and the complex ties of kinship, their influences in shaping childhood culture, and how they determined cultural expectations across ethnic groups. Geared to upper-level undergraduate courses, this text offers a comprehensive and rigorous treatment of the technology involved in producing, transporting, and storing natural gas. Emphasizing a systems approach, the text also considers the theory and actual practice of natural gas engineering. Combined with Gas Reservoir Engineering, the texts form a two-course sequence.

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.

Aneji Eko

Science and Technology

Natural Gas

Principles and Practices

Experimental Characterizations, Theoretical Modeling, and Field Practices

Basic level textbook covering concepts and practical analytical techniques of reservoir engineering.

Written by an internationally-recognized team of natural gas industry experts, the fourth edition of Handbook of Natural Gas Transmission and Processing is a unique, well-researched, and comprehensive work on the design and operation aspects of natural gas transmission and processing. Six new chapters have been added to include detailed discussion of the thermodynamic and energy efficiency of relevant processes, and recent developments in treating super-rich gas, high CO₂ content gas, and high nitrogen content gas with other contaminants. The new material describes technologies for processing today's unconventional gases, providing a fresh approach in solving today's gas processing challenges including greenhouse gas emissions. The updated edition is an excellent platform for gas processors and educators to understand the basic principles and innovative designs necessary to meet today's environmental and sustainability requirement while delivering acceptable project economics. Covers all technical and operational aspects of natural gas transmission and processing. Provides pivotal updates on the latest technologies, applications, and solutions. Helps to understand today's natural gas resources, and the best gas processing technologies. Offers design optimization and advice on the design and operation of gas plants.

Provides a comprehensive treatment of natural gas engineering, covering most operations of the gas engineering. It is appropriate for courses in natural gas engineering, advanced reservoir engineering and petroleum engineering offered in departments of chemical engineering.

Wax Deposition

Petroleum Production Systems

Introduction to Petroleum Engineering

Applied Petroleum Reservoir Engineering

This first of two volumes provides a comprehensive overview of petroleum engineering. Created with the purpose of answering daily questions faced by the practicing petroleum engineer, it is suitable for field and office use.

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 Production Systems, Second Edition, is the comprehensive source for clear and fundamental methods for about modern petroleum production engineering practice. Written by four leading experts, it thoroughly introduces modern principles of petroleum production systems design and operation, fully considering the combined behavior of reservoirs, surface equipment, pipeline systems, and storage facilities. Long considered the definitive text for production engineers, this edition adds extensive new coverage of hydraulic fracturing, with emphasis on well productivity optimization. It presents new chapters on horizontal wells and well performance evaluation, including production data analysis and sand management. This edition features: A structured approach spanning classical production engineering, well testing, production logging, artificial lift, and matrix and hydraulic fracture stimulation; Revisions throughout to reflect recent innovations and extensive feedback from both students and colleagues; Detailed coverage of modern best practices and their rationales; Unconventional oil and gas well design; Many new examples and problems; Detailed data sets for three characteristic reservoir types: an undersaturated oil reservoir, a saturated oil reservoir, and a gas reservoir.

Reservoir Engineering

Surface Operations in Petroleum Production, II

Contracts for Field Projects and Supporting Research on Enhanced Oil Recovery and Improved Drilling Technology

Modern Fracturing

Natural Gas Engineering

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.

The Definitive Guide to Petroleum Reservoir Engineering-Now Fully Updated to Reflect New Technologies and Easier Calculation Methods Craft and Hawkins' classic introduction to petroleum reservoir engineering is now fully updated for new technologies and methods, preparing students and practitioners to succeed in the modern industry. In **Applied Petroleum Reservoir Engineering, Third Edition**, renowned expert Ronald E. Terry and project engineer J. Brandon Rogers review the history of reservoir engineering, define key terms, carefully introduce the material balance approach, and show how to apply it with many types of reservoirs. Next, they introduce key principles of fluid flow, water influx, and advanced recovery (including hydrofracturing). Throughout, they present field examples demonstrating the use of material balance and history matching to predict reservoir performance. For the first time, this edition relies on Microsoft Excel with VBA to make calculations easier and more intuitive. This edition features Extensive updates to reflect modern practices and technologies, including gas condensate reservoirs, water flooding, and enhanced oil recovery Clearer, more complete introductions to vocabulary and concepts- including a more extensive glossary Several complete application examples, including single-phase gas, gas-condensate, undersaturated oil, and saturated oil reservoirs Calculation examples using Microsoft Excel with VBA throughout Many new example and practice problems using actual

well data A revamped history-matching case study project that integrates key topics and asks readers to predict future well production

"Consumption and demand for natural gas rises annually throughout the world. Finding, drilling, extracting, processing and transporting natural gas remains a demanding challenge. This new book presents the quintessential guide for reservoir engineers, production engineers, production geologists, and more."--BOOK JACKET.

Gas Storage

Reservoir Engineering Handbook

Standard Handbook of Petroleum and Natural Gas Engineering:

Petroleum Economics and Engineering

Enhancing Natural Gas Production

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

Any mention of the "greenhouse effect" tends to ignite controversy. While the rising atmospheric concentrations of greenhouse gases-especially carbon dioxide- are certainly among the most pressing issues today, theoretical and perceived consequences have been subject to conjecture and misinformation. That raging debate has obscured an important fact: scientists and engineers are hard at work on methods to reduce CO₂ emissions, and devise practical methods for their remediation. Greenhouse Gas Carbon Dioxide Mitigation: Science and Technology sheds light on the most recent advancements, documented by two of the world's leading researchers on CO₂. Aware of the complexity and still-unknown factors behind climatic change, the authors consider the need to make CO₂ mitigation viable for both environmental and economic gain. To that end, Professor Halmann offers new insights into interesting chemical pathways for the conversion of CO₂ to useful products. Steinberg adds real-life engineering solutions, applicable to heavy CO₂-producing industrial processes, and improving efficiency of energy conversion. Exciting theories and pilot projects are also testing the potential for CO₂ utilization, conversion, reduction, and disposal. Greenhouse Gas Carbon Dioxide Mitigation: Science and Technology reports on the use of biomass, such as ocean fertilization and "energy farms," to put CO₂ to practical and safe use. Professional and academic readers involved with CO₂ research will find Greenhouse Gas Carbon Dioxide Mitigation: Science and Technology an invaluable roadmap for information and inspiration-a way to move beyond argument, and into action. With rapid changes in field development methods being created over the past few decades, there is a growing need for more information regarding energizing well production. Written by the world's most respected petroleum engineering authors, Well Productivity Handbook provides knowledge for modeling oil and gas wells with simple and complex trajectories. Covering critical topics, such as petroleum fluid properties, reservoir deliverability, wellbore flow performance and productivity of intelligent well systems, this handbook explains real-world applications illustrated with example problems.

Advanced Reservoir Management and Engineering

Journal of Petroleum Technology

Society of Petroleum Engineers Journal

United States Court of International Trade Reports

Fundamentals and Applications

Gas reservoir engineering is the branch of reservoir engineering that deals exclusively with reservoirs of non-associated gas. The prime purpose of reservoir engineering is the formulation of development and production plans that will result in maximum recovery for a given set of economic, environmental and technical constraints. This is not a one-time activity but needs continual updating throughout the production life of a reservoir. The objective of this book is to bring together the fundamentals of gas reservoir engineering in a coherent and systematic manner. It is intended both for students who are new to the subject and practitioners, who may use this book as a reference and refresher. Each chapter can be read independently of the others and includes several, completely worked exercises. These exercises are an integral part of

the book; they not only illustrate the theory but also show how to apply the theory to practical problems. Chapters 2, 3 and 4 are concerned with the basic physical properties of reservoirs and natural gas fluids, insofar as of relevance to gas reservoir engineering. Chapter 5 deals with the volumetric estimation of hydrocarbon fluids in-place and the recoverable hydrocarbon reserves of gas reservoirs. Chapter 6 presents the material balance method, a classic method for the analysis of reservoir performance based on the Law of Conservation of Mass. Chapters 7-10 discuss various aspects of the flow of natural gas in the reservoir and the wellbore: single phase flow in porous and permeable media; gaswell testing methods based on single-phase flow principles; the mechanics of gas flow in the wellbore; the problem of water coning, the production of water along with the gas in gas reservoirs with underlying bottom water. Chapter 11 discusses natural depletion, the common development option for dry and wet gas reservoirs. The development of gas-condensate reservoirs by gas injection is treated in Chapter 12. Appendix A lists the commonly used units in gas reservoir engineering, along with their conversion factors. Appendix B includes some special physical and mathematical constants that are of particular interest in gas reservoir engineering. Finally, Appendix C contains the physical properties of some common natural-gas components.

Working Guide to Petroleum and Natural Gas Production Engineering provides an introduction to key concepts and processes in oil and gas production engineering. It begins by describing correlation and procedures for predicting the physical properties of natural gas and oil. These include compressibility factor and phase behavior, field sampling process and laboratory measurements, and prediction of a vapor-liquid mixture. The book discusses the basic parameters of multiphase fluid flow, various flow regimes, and multiphase flow models. It explains the natural flow performance of oil, gas, and the mixture. The final chapter covers the design, use, function, operation, and maintenance of oil and gas production facilities; the design and construction of separators; and oil and gas separation and treatment systems. Evaluate well inflow performance Guide to properties of hydrocarbon mixtures Evaluate Gas production and processing facilities

Petroleum Production Engineering

Hearings Before the Subcommittee on Fossil and Synthetic Fuels of the Committee on Energy and Commerce, House of Representatives, Ninety-eighth Congress, First Session

Production and Storage

Proposed Changes to Natural Gas Laws

JPT : Journal of Petroleum Technology