Stratigraphic Reservoir Characterization For Petroleum Geologists Geophysicists And Engineers Volume 61 Second Edition Developments In Petroleum Science

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HARRISON BRADFORD

Reservoir Characterization and Potential for Improved Oil Recovery Within the Aux Vases Formation at Stewardson Field, Shelby County, Illinois Elsevier Inc. Chapters
Reservoir Characterization is a collection of papers presented at the Reservoir Characterization Technical Conference, held at the Westin Hotel-Galleria in Dallas on April 29-May 1, 1985. Conference held April 29-May 1, 1985, at the Westin Hotel—Galleria in Dallas. The conference was sponsored by the National Institute for Petroleum and Energy Research, Bartlesville, Oklahoma. Reservoir characterization is a process for quantitatively assigning reservoir properties, recognizing geologic information and uncertainties in spatial variability. This book contains 19 chapters, and begins with the geological characterization of sandstone reservoir, followed by the geological prediction of shale distribution within the Prudhoe Bay field. The subsequent chapters are devoted to determination of reservoir properties, such as porosity, mineral occurrence, and permeability variation estimation. The discussion then shifts to the utility of a Bayesian-type formalism to delineate qualitative ""soft"" information and expert interpretation of reservoir description data. This topic is followed by papers concerning reservoir simulation, parameter assignment, and method of calculation of wetting phase relative permeability. This text also deals with the role of discontinuous vertical flow barriers in reservoir engineering. The last chapters focus on the effect of reservoir heterogeneity on oil reservoir. Petroleum engineers, scientists, and researchers will find this book of great value.
Reservoir Characterization and Potential for Improved Oil Recovery Within the Aux Vases Formation at Stewardson Field, Shelby County, Illinois Elsevier Inc. Chapters
There are many tools and techniques for characterizing oil and gas reservoirs. Seismic-reflection techniques include conventional 2D and 3D seismic, 4D time-lapse seismic, multicomponent seismic, crosswell seismic, seismic inversion, and seismic attribute analysis, all designed to enhance stratigraphy/structure detection, resolution, and characterization. These techniques are constantly being improved. Drilling and coring a well provides the “ground truth” for seismic interpretation. Rock formations are directly sampled by cuttings and by core and indirectly characterized with a variety of conventional and specialized well logs. To maximize characterization and optimize production, many of these tools as possible should be employed. It is often less expensive to utilize a wide variety of tools that directly image or measure reservoir properties at different scales than to drill one or two dry holes.
Stratigraphic Reservoir Characterization for Petroleum Geologists, Geophysicists, and Engineers Elsevier Inc. Chapters
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.
Seismic Attributes for Prospect Identification and Reservoir Characterization Newnes
This book provides a comprehensive overview of the parameters and factors that cause heterogeneity in carbonate reservoirs, and examines how they interact with one another. It explores the various scales of heterogeneity, how they are caused, and how they can be minimized, as well as how the scales affect each other, providing practical examples in each chapter. The book concludes by discussing the effect of heterogeneity on petrophysical evaluations. As reducing heterogeneity is the only way to obtain accurate carbonate reservoir characteristics at the regional scale, the book offers an important reference guide for all geologists, engineers, and modelers working with subsurface data.
Petroleum Geology and Reservoir Characterization of the Big Injun Sandstone (Price Formation) in the Rock Creek (Walton) Field, Roane County, West Virginia Elsevier
This book offers a compact guide to geological core analysis, covering both theoretical and practical aspects of geological studies of reservoir cores. It equips the reader with the knowledge needed to precisely and accurately analyse cores. The book begins by providing a description of a coring plan, coring, and core sampling and continues with a sample preparation for geological analysis. It then goes on to explain how the samples are named, classified and integrated in order to understand the geological properties that dictate reservoir characteristics. Subsequently, porosity and permeability data derived from routine experiments are combined to define geological rock types and reduce reservoir heterogeneity. Sequence stratigraphy is introduced for reservoir zonation. Core log preparation is also covered, allowing reservoirs to be analysed even more accurately. As the study of core samples is the only way to accurately gauge reservoir properties, this book provides a useful guide for all geologists and engineers working with subsurface samples.
Stratigraphic Reservoir Characterization for Petroleum Geologists, Geophysicists, and Engineers Elsevier Inc. Chapters

Reservoirs described in this volume are located in the Middle East, Asia, West Africa, North and South America. The authors explore historical and alternative approaches to reservoir description, characterization, and management, as well as examining appropriate levels and timing of data gathering, technology applications, evaluation techniques, and management practices in various stages in the life of individual development projects. The giant fields discussed address issues important to reservoir description, characterization, and management from both geologic & engineering perspectives.

Sepm Society for Sedimentary

Fine Reservoir Description: Techniques, Current Status, Challenges and Solutions presents studies on fine oil and gas reservoirs, covering aspects of current status and progress, content and methods/techniques, as well as challenges and solutions through literature review and case studies of reservoirs, including volcanic rocks in the Songliao Basin, glutenite at the northwestern margin of the Junggar Basin, and sandstone in the Liaohe Basin, China. This book contains a large amount of data and illustrations. Provides a comprehensive overview of the latest advances in refined reservoir characterization for three types of reservoirs: high water cut, low permeability, and complex lithology Includes methods and techniques of fine reservoir description that are elaborated from nine aspects, such as fine stratigraphic division and correlation, fracture characterization and fine characterization of sand body Presents eight easy to use measures that are proposed to solve the problems of fine reservoir description

Giant Hydrocarbon Reservoirs of The World Elsevier

Accurate reservoir characterization is a key step in developing, monitoring, and managing a reservoir and optimizing production. To achieve accuracy and to ensure that all the information available at any given time is incorporated in the reservoirmodel, reservoir characterizationmust be dynamic. To achieve this goal, however, one starts with a simple model of the reservoir at a given time point (a static model). As new petrophysical, seismic, and production data become available, the reservoir model is updated to account for the changes in the reservoir. The updated model would be a better representative of the current status of the reservoir. Both static reservoir properties, such as porosity, permeability, and facies type; and dynamic reservoir properties, such as pressure, fluid saturation, and temperature, needs to be updated as more field data become available. Characterizing a reservoir by updating of both static and dynamic reservoir properties during the life of the field is referred to as dynamic reservoir characterization. Dynamic reservoir characterization is discussed in , dealing with time lapse or 4D geophysical data and reservoir monitoring. This chapter, however, focuses on static reservoir characterization.

The Practice of Reservoir Engineering (Revised Edition) Stratigraphic Reservoir Characterization for Petroleum Geologists, Geophysicists, and Engineers

In summary, physical, biogenic, and chemical sedimentary structures are important to many aspects of reservoir characterization and should be included in every characterization, whether the analyst is using cores, borehole-image logs, or an analog outcrop. Sedimentary structures provide important information about the depositional environment of the reservoir rock, and from that information, one can determine the extent and geometry of the reservoir, its trend, and any likely impediments to hydrocarbon production. Porosity and permeability and, in particular, fluid-flow paths are also affected and guided by how the sediment grains are arranged into specific structures. Finally, one should bear in mind that some sedimentary structures can produce misleading or erroneous well-log results.

Reservoir Characterization and Sequence Stratigraphy of the Domengine Formation, Black Diamond Mines Regional Preserve, Northern California Elsevier Inc. Chapters

This chapter has summarized the important characteristics of deepwater deposits and reservoirs. These reservoirs are quite complex and variable. An understanding of the different architectural elements and their interrelations is critical to hydrocarbon recovery, because the elements exhibit different external geometries, sizes, spatial orientations, and internal sedimentary and stratigraphic features. Because of these differences, the volume of hydrocarbons and the anticipated recovery efficiency will vary by architectural element (). There are many new and awaiting opportunities for deepwater reservoirs both onshore and offshore. The US Gulf of Mexico and many other parts of the world are hot spots or emerging areas for exploration and development of vast resources of oil and gas (Fig. 11.93).

Stratigraphic Reservoir Characterization for Petroleum Geologists, Geophysicists, and Engineers Springer

There are different types of fluvial deposits and reservoirs. The two end-member depositional types are braided-river and fluvial-river deposits. A third type, incised valley fill, can contain either or both of these end members within the confines of the valley. In addition, fluvial deposits near the mouths of the valleys may become reworked by estuarine and tidal processes, which ultimately produce a different set of reservoir properties. The geometry, size, and reservoir characteristics of each fluvial type depend upon transportational, depositional, and postdepositional (diagenetic) processes that are controlled by several external variables, including geographic location, sediment source areas (provenance), climate, and degree of tectonic activity. Braided-river deposits tend to be relatively coarse-grained and consist of gravel and sand, with little to no mud. Because of this, the beds tend to be laterally continuous over much or all of the width of the braidplain, although the presence of some shale beds may disrupt the continuity locally. By contrast, meandering-river deposits tend to be finer-grained, more lenticular, and partially or completely encased in floodplain shales. Depending upon the deposit's degree and type of postdepositional compaction and cementation, its porosity and permeability can be quite variable. However, in general, braided-river facies are more porous and more permeable than are meandering-river facies. A typical sequence stratigraphic stacking pattern for fluvial deposits consists of a basal erosion surface, formed during a falling stage of relative sea level, upon which sits, from the base upward, a lower braided-river deposit (deposited during early turnaround in relative sea level), a floodplain–meandering-river system, and then lacustrine and/or estuarine/floodplain deposits of a transgressive systems tract, capped by highstand floodplain/meandering-river deposits. As a result of differences in properties, fluvial reservoirs can be expected to have quite varied performances. Any reservoir-management plan should include an evaluation of the type of fluvial reservoir and its characteristics. For example, waterflood sweep efficiency will be higher in a braided-river reservoir than in a meandering-river reservoir. Also, horizontal wells may be more efficient in a set of discontinuous meandering-river sandstones than in a more continuous and interconnected set of braided-river deposits. Seismic-

reflection techniques, as well as well-log, core, and well-test analyses, all can be used to adequately define the type of fluvial reservoir and predict the recovery performance and efficiency of that reservoir.

Fine Reservoir Description Academic Press

Stratigraphic Reservoir Characterization for Petroleum Geologists, Geophysicists, and EngineersNewnes

Hydrocarbon Reservoir Characterization Elsevier

Certain parts of this chapter have been taken directly from the publication Important geological properties of unconventional resource shales, by Roger M. Slatt, published in the fourth-quarter issue of the Central European Journal of Geosciences (2011). The journal's permission to reproduce those parts of that paper here is gratefully acknowledged.

Stratigraphic Reservoir Characterization for Petroleum Geologists, Geophysicists, and Engineers Elsevier Inc. Chapters

Elements of Petroleum Geology, Fourth Edition is a useful primer for geophysicists, geologists and petroleum engineers in the oil industry who wish to expand their knowledge beyond their specialized area. It is also an excellent introductory text for a university course in petroleum geoscience. This updated edition includes new case studies on non-conventional exploration, including tight oil and shale gas exploration, as well as coverage of the impacts on petroleum geology on the environment. Sections on shale reservoirs, flow units and containers, IOR and EOR, giant petroleum provinces, halo reservoirs, and resource estimation methods are also expanded. Written by a preeminent petroleum geologist and sedimentologist with decades of petroleum exploration in remote corners of the world Covers information pertinent to everyone working in the oil and gas industry, especially geophysicists, geologists and petroleum reservoir engineers Fully revised with updated references and expanded coverage of topics and new case studies

Uncertainty Analysis and Reservoir Modeling SEG Books

Reservoir characterization as a discipline grew out of the recognition that more oil and gas could be extracted from reservoirs if the geology of the reservoir was understood. Prior to that awakening, reservoir development and production were the realm of the petroleum engineer. In fact, geologists of that time would have felt slighted if asked by corporate management to move from an exciting exploration assignment to a more mundane assignment working with an engineer to improve a reservoir's performance. Slowly, reservoir characterization came into its own as a quantitative, multidisciplinary endeavor requiring a vast array of skills and knowledge sets. Perhaps the biggest attractor to becoming a reservoir geologist was the advent of fast computing, followed by visualization programs and theaters, all of which allow young geoscientists to practice their computing skills in a highly technical work environment. Also, the discipline grew in parallel with the evolution of data integration and the advent of asset teams in the petroleum industry. Finally, reservoir characterization flourished with the quantum improvements that have occurred in geophysical acquisition and processing techniques and that allow geophysicists to image internal reservoir complexities.

Reservoir Characterization of the Pontotoc Group, Robberson Field AAPG

Reservoir characterization as a discipline grew out of the recognition that more oil and gas could be extracted from reservoirs if the geology of the reservoir was understood. Prior to that awakening, reservoir development and production were the realm of the petroleum engineer. In fact, geologists of that time would have felt slighted if asked by corporate management to move from an exciting exploration assignment to a more mundane assignment working with an engineer to improve a reservoir's performance. Slowly, reservoir characterization came into its own as a quantitative, multidisciplinary endeavor requiring a vast array of skills and knowledge sets. Perhaps the biggest attractor to becoming a reservoir geologist was the advent of fast computing, followed by visualization programs and theaters, all of which allow young geoscientists to practice their computing skills in a highly technical work environment. Also, the discipline grew in parallel with the evolution of data integration and the advent of asset teams in the petroleum industry. Finally, reservoir characterization flourished with the quantum improvements that have occurred in geophysical acquisition and processing techniques and that allow geophysicists to image internal reservoir complexities. Practical resource describing different types of sandstone and shale reservoirs Case histories of reservoir studies for easy comparison Applications of standard, new, and emerging technologies

Stratigraphic Architecture and Reservoir Characterization of the Silurian Racine Formation, Forsyth Oil Field, Macon County, Central Illinois AAPG

This chapter has summarized the concepts, techniques, and definitions of sequence stratigraphy. As in most subdivisions of geology, sequence stratigraphers have developed their own set of definitions and terminology, which have been outlined here for use in subsequent chapters. It is proposed that sequence stratigraphy form the basis for reservoir characterization, as will be expanded upon in subsequent chapters.

Stratigraphic reservoir characterization for petroleum geologists, geophysicists, and engineers Elsevier Inc. Chapters

This topical report is a compilation of characterizations by different disciplines of the Red River Formation in the southwest portion of the Williston Basin and the oil reservoirs which it contains in an area which straddles the state line between North Dakota and South Dakota. Goals of the report are to increase understanding of the reservoir rocks, oil-in-place, heterogeneity, and methods for improved recovery. The report is divided by discipline into five major sections: (1) geology, (2) petrography-petrophysical, (3) engineering, (4) case studies and (5) geophysical. Interwoven in these sections are results from demonstration wells which were drilled or selected for special testing to evaluate important concepts for field development and enhanced recovery. The Red River study area has been successfully explored with two-dimensional (2D) seismic. Improved reservoir characterization utilizing 3-dimensional (3D) and has been investigated for identification of structural and stratigraphic reservoir compartments. These seismic characterization tools are integrated with geological and engineering studies. Targeted drilling from predictions using 3D seismic for porosity development were successful in developing significant reserves at close distances to old wells. Short-lateral and horizontal drilling technologies were tested for improved completion efficiency. Lateral completions should improve economics for both primary and secondary recovery where low permeability is a problem and higher density drilling is limited by drilling cost. Low water injectivity and widely spaced wells have restricted the application of

waterflooding in the past. Water injection tests were performed in both a vertical and a horizontal well. Data from these tests were used to predict long-term injection and oil recovery.
Stratigraphic Reservoir Characterization for Petroleum Geologists, Geophysicists, and Engineers Elsevier
A critical component of reservoir management is the accurate characterization of the hydrocarbon asset, called reservoir characterization. The topic of this course is the process of sequence-stratigraphic interpretation and characterization of carbonate reservoirs. The authors believe that the two disciplines are so intimately related that the sequence framework should be considered a critical piece of the integrated puzzle.
Reservoir Characterization of the Ordovician Red River Formation in Southwest Williston Basin Bowman County, ND and Harding County, SD. Elsevier Inc. Chapters

Globally, deltas often contain major oil and gas reservoirs. The geometry, size, and internal architecture of deltas are functions of many variables related to the delta's mode of formation. A tripartite classification of deltas, into river-, wave-, and tide-dominated deltas, has been a standard for many years. However, even within each of these delta types, the distribution of properties can vary considerably depending on the delta’s depositional history and the relative influence of rivers, waves, and tides. With regard to reservoir performance and optimization, perhaps the most significant difference in delta properties is in orientation and continuity of sand (reservoir) and shale (barrier) trends. Reservoir quality also varies according to the facies within the delta. To maximize hydrocarbon production, it is not sufficient to merely classify the reservoir as a delta. A complete understanding of the characteristics and variations of an individual delta’s reservoir is required for proper well placement and reservoir management.