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Roger Slatt, Reservoir

Characterization Day 1 (Video A) Roger Slatt, Reservoir Characterization Day 1 (Video E) Reservoir Characterization, Dr. Moustafa Oraby 02/05

SDC SRC - Conditioning Seismic Data for Advanced Reservoir Characterization Studies | Session 1

Roger Slatt, Reservoir Characterization Day 1 (Video F) 3-Source of data for geological modeling and reservoir characterization

Source Rocks \u0026 HC Generation - Petroleum Exploration: A Field Example 4-General Procedure for geologic modeling

and reservoir characterization Reservoir Group - Reservoir Characterization

Stratigraphic Hydrocarbon Traps ***Petroleum Geology: Reservoir rock properties \u0026 Trapping*** *Petroleum* ***Geology: Migration from source rock to reservoir***

Integrated Field Development Planning: A Pore-to-Process Perspective

Reservoir - Rock Properties ***Well Log Interpretation Review Ab Conventional \u0026 Unconventional Reservoirs; What Is In \u0026 Out in Pressure \u0026 Rate Transient Analysis***

Reservoir Rock Properties and Basic Log Interpretation, Dr. Moustafa Oraby

What is GEOLOGIC MODELLING? What does GEOLOGIC MODELLING mean? GEOLOGIC MODELLING meaning

37) Depositional Environments ~~**Applied Petroleum Reservoir Engineering -**~~

Chapter 1 reservoir simulation p ***Janet Watson 2018: Machine Learning Assisted Petroleum Geoscience High Frequency/High Fidelity Reservoir Characterization Reveal Potential in Complex Carbonate Formations with Geology-guided Rock Physics Modeling***

Geology and Exploration Trends in the Gulf of Mexico 'Superbasin' US and Mexico **The Importance of Natural Fracture Type in Controlling Reservoir Permeability** **Visual Cuttings \u0026 Core Description to Characterize Reservoir \u0026**

Non Reservoir Rock *Professor Mark Bentley, Heriot-Watt University (Reservoir model design)* **Webinar: Blueback ODiSI - A revolutionary new approach to seismic reservoir characterization** **Seismic Interpretation Below Tuning with Multi-**

Attribute Analysis *Stratigraphic Reservoir Characterization For Petroleum* **Stratigraphic Reservoir Characterization for Petroleum Geologists, Geophysicists, and Engineers. COVID-19 Update: We are currently shipping**

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Stratigraphic Reservoir Characterization for Petroleum Geologists, Geophysicists, and Engineers focuses on stratigraphic aspects of clastic reservoir

characterization, with emphasis on understanding the primary control that depositional processes and systems exert on reservoir performance, and the extent to which stratigraphic features can be predicted away from the wellbore. The book

only deals with structural aspects in a peripheral manner because this topic is very comprehensive and ...

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Stratigraphic

reservoir characterization for petroleum ...

Stratigraphic Reservoir Characterization for Petroleum Geologists, Geophysicists, and Engineers Edited by Roger M. Slatt Volume 6, Pages 1-478 (2006)

Stratigraphic Reservoir Characterization for Petroleum ...

1. Basic principles and applications of reservoir characterization 2. Basic sedimentary rock properties 3. Geologic time and basic stratigraphy 4. Tools and techniques for reservoir 5.

Sequence stratigraphy for reservoir characterization 6. Geologic controls on reservoir quality 7. Fluvial deposits and reservoirs 8. Eolian (windblown) deposits ...

Stratigraphic Reservoir Characterization for

Petroleum ...

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more oil and gas could be extracted from res...

Stratigraphic Reservoir Characterization for Petroleum ...

Stratigraphic Reservoir Characterization for Petroleum Geologists, Geophysicists, and

Engineers: Origin, Recognition, Initiation, and Reservoir Quality. 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.

Stratigraphic Reservoir Characterization for Petroleum ...

Stratigraphic Reservoir Characterization for Petroleum Geologists, Geophysicists, and Engineers (ISSN Book 61) - Kindle edition by Slatt, Roger M..

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Stratigraphic Reservoir Characterization for Petroleum ...

Stratigraphic reservoir characterization for petroleum geologists, geophysicists, and engineers. Responsibility. Roger

M. Slatt. Edition. 1st ed. Imprint. Amsterdam ; Boston : Elsevier, 2006. Physical description.

Stratigraphic reservoir characterization for petroleum ...

Reservoir characterization is an important aspect in petroleum geology

and engineering. It deals with construction of realistic image of petrophysical properties to be used to predict reservoir performance [1]. The present study aims to testify the reservoir potential of one of the Early Jurassic stratigraphic units, which is Butmah

Formation.

Reservoir Characterization of the Early Jurassic Butmah ...

Reservoir Characterization In reservoir characterization, wireline (e.g., gamma-ray) log motifs are the basic subsurface data that are

routinely used by the petroleum industry. Interpreting a process-specific depositional facies (e.g., slide vs. debrite) from a log motif, without corresponding sediment core, is impossible.

Reservoir Characterization - an

overview | ScienceDirect ...

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Stratigraphic Reservoir Characterization for Petroleum ...

5. Simplified geologic age relationships of the principal oil producing stratigraphic units of Texas • 15 6. (A) Temporal distribution of in-place Texas oil and (B) cumulative oil

production (as of 1981) by reservoir age • • 17 7. Distribution of major oil in terrigenous clastic and allochemical reservoirs. • 18 8.

GEOLOGICAL CHARACTERIZATION OF

T1 - Stratigraphy and reservoir

characterization of the Silurian Racine Formation in Harristown oil field, central Illinois. AU - Askari, Zohreh. AU - Lasemi, Yaghoob. PY - 2018. Y1 - 2018. N2 - The Middle Silurian Racine Formation is the major oil-producing unit in the southeastern flank of the Sangamon Arch,

northwest of the Illinois Basin.

Stratigraphy and reservoir characterization of the ...

Characterize marine stratigraphy and build relationships with depositional environments using outcrop, core, and other oil and gas

industry data; Use lithofacies and stratigraphic architecture to understand variations in deep-water reservoir properties pertaining to petroleum reservoir presence, quality, and seal presence

IOSC- Integrated

Methods for Deep-Water Reservoir ...

Various stimulation treatments must be designed to optimize production for different stratigraphic zones or areas of the field. Multiple completions and/or selective injection equipment are required.

Reservoir

characterization and management problems. Correlations that subdivide the reservoir into meaningful producing zones must be consistent.

Stratigraphically complex fields - AAPG Wiki

Seismic Driven

Multistage Reservoir Characterization Process of Thinly Sand-Shale Interbedded Deltaic Reservoirs — A Case Study from the Tapti Daman Sector of Mumbai Offshore Basin, India ...

Coupled Stratigraphic, Diagenetic and Basin Modelling for an

Ultra-Deep Petroleum System Analysis: A Case Study from the Tarim Basin, China ...

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

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.

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.

The focus of this chapter has been on eolian reservoirs, with only a secondary emphasis on description of outcrops. That is because the unique, fine-scale stratification characteristics of eolian deposits that

affect their reservoir performance have been very well documented from the reservoirs themselves. Because of the likelihood of stratigraphic compartmentalization and permeability anisotropy resulting from bounding surfaces, it is very important that eolian

reservoirs be characterized in detail. In addition to the effects of bounding surfaces, variations in cementation within laminae of different grain sizes result in small-scale variations in porosity and permeability, which are difficult and expensive to measure

and document. This fact further emphasizes the importance of detailed reservoir characterization.

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.

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).

In this chapter, the principles of reservoir modeling, workflows and their applications have been summarized. Reservoir modeling is a multi-disciplinary process that requires

cooperation from geologists, geophysicists, reservoir engineers, petrophysics and financial individuals, working in a team setting. The best model is one that provides quantitative properties of the reservoir, though this is often difficult to achieve. There are

three broad steps in the modeling process. The team needs to first evaluate the data quality, plan the proper modeling workflow, and understand the range of uncertainties of the reservoir. The second step is data preparation and interpretation, which

can be a long, tedious, but essential process, which may include multiple iterations of quality control, interpretation, calibration and tests. The third step is determining whether to build a deterministic (single, data-based model) or stochastic (multiple

geostatistical iterations) model. The modeling approach may be decided by the quality and quantity of the data. There is no single rule of thumb because no two reservoirs are identical. Object-based stochastic modeling is the most widely used

modeling method today. The modeling results need to be constrained and refined by both geologic and mathematical validation. Variogram analysis is very important in quality control of object-based stochastic modeling. Outcrops are excellent sources

of continuous data which can be incorporated into subsurface reservoir modeling either by 1) building an outcrop “ reservoir ” model, or 2) identifying and developing outcrop analogs of subsurface reservoirs. Significant upscaling of a reservoir model for flow simulation may

well result in an erroneous history match because the upscaling process often deletes lateral and vertical heterogeneities which may control or affect reservoir performance, particularly in a deterministic model. Reservoir uncertainties are

easier to manipulate by object-based stochastic models. Choosing the best realization approach for the reservoir model is the key to predicting reservoir performance in the management of reservoirs.

Shallow marine environments, from

the shoreline to the shelf edge, are complex and result in complex deposits. In turn, complex deposits translate into complex reservoirs. To maximize reservoir performance, it is imperative that we understand the type of shallow marine deposit that makes

up the reservoir. That is not an easy task, as is exemplified by the various interpretations that have been assigned to linear sandstones of the U.S. Cretaceous Western Interior Seaway. These sandstones, in both outcrop and subsurface reservoirs, have been

interpreted to be offshore shelf bars or ridges, shoreface bodies, and incised valley fill. Interpreting the type of deposit is not merely an academic exercise, it is essential because each of these different types of sandstone bodies is characterized by different geometries

and degrees of compartmentalization. There are numerous examples of shoreface deposits that are truncated by younger incised valley fill. Subtle variations in gamma-ray log response can be used to identify such strata. Barrier-island deposits provide a particularly

challenging reservoir characterization problem. Because of the variety of sedimentary processes that can influence barrier-island formation, several different sandstone and shale geometries and trends can occur. That variation in geometries can lead

to the potential for a high degree of compartmentalization that is difficult to predict. Again, depositional-geometry prediction and well placement are facilitated by an understanding of the nature of the deposit and how it was formed.

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 fl oodplain–meanderi ng-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 re

servoir-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.

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