Research method and application of sedimentary facies in oilfield development

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Abstract. The study of reservoir sedimentary facies can better describe the reservoir and ensure the smooth implementation of production. An in-depth understanding of the specific achievements of the sedimentary facies studies in the past few years can help us more accurately grasp the development process of geology and basins, so as to effectively improve the formation efficiency of oil and gas fields and thus achieve the improvement of economic benefits. In the process of determining the non-tectonical reservoirs, the study of sedimentary facies and sedimentary environment can be realized, but the study of these two aspects is still lacking and the effect is not very good. The study of sedimentary facies has a direct impact on the development of oil and gas in Our country, this paper mainly from the main characteristics of oil and gas development, in-depth introduction of the current oil reservoir development in a specific practical situation, in-depth introduction of the sedimentary relative to the specific advantages of oil and gas development.

Key words: Sedimentary facies; Research; Significance; Methods; using.

1. Preface
With the development of China's industrial technology, the amount of oil is relatively large. As a very important form of energy in the industry, the demand for oil will naturally increase gradually. Under
this background, in order to find oil and gas reservoirs with good storage effect, it is necessary to comprehensively understand and analyze the main characteristics of reservoirs.

2. Main analysis steps of logging reservoir sedimentary facies

In the process of studying sedimentary facies of well logging reservoirs, it is necessary to start from the curve data, take oil and gas reservoir as the main foothold, and gradually start to improve the sedimentary facies model, which is very important for oil exploration and development.

2.1. Formation correlation

Constant improvement of isochronous stratigraphic framework by means of contrast is very important for well logging reservoir sedimentary facies and is also the basic condition for follow-up work. The sedimentary environment cannot be stable in the process of geological change for a long time. Therefore, the study of sedimentary facies needs to take the layer as the basic unit of study. The sedimentation unit model should be continuously established and improved, and the optimal thickness parameter should be determined in the first time, so that the follow-up work can be carried out better. If the distance between Wells is small, the structure will be simpler, and the same thickness will be almost the same. The method of grouping usually USES the similarity of the shape of logging curves to carry out the comparison.

2.2. Reservoir parameters acquisition

The phase change law of sedimentary facies in logging data includes the following points: amplitude, thickness, curve shape and so on. However, in practical application, if only one parameter can better reflect the actual conditions of the sedimentary environment, the results are relatively one-sided. At the same time, if there are too many parameters, the judgment will be more difficult. Therefore, the parameters of the above aspects are very irreplaceable.

3. Significance of sedimentary facies study

Sedimentary facies are mainly composed of using environment, forming conditions and basic features of sediments formed by environment, and they are also sedimentary bodies reflecting the natural environment. The study of sedimentary facies has the following significance:

First, the sedimentary facies can judge the specific conditions of sediments mainly through spatial distribution, and at the same time, the characteristics of reservoir and permeability can be grasped more fully.

Second, the study of sedimentary facies can improve the strength and efficiency of oil and gas and limestone exploitation. Thirdly, in the practice of oil and gas development, the use of sedimentary facies technology can more accurately grasp the basin scale, and then explore the size data of reservoirs and reservoirs to develop oil.

Fourth, accurate analysis of sedimentary facies map can more accurately grasp the actual distribution of sand body, and comprehensively grasp the application law and characteristics of sand body oil and water, so as to more accurately understand the dynamic information of oil field development, and thus effectively predict the development time effect.

4. Sedimentary facies research methods

Single well sedimentary facies analysis and sedimentary facies profile and plane distribution are applied in the process of oil and gas development, but it is difficult to develop and the terrain is very complex, which has more important practical value for fault-block oilfield development.

4.1. Analysis of single well sedimentary facies

Single well sedimentary facies is mainly through the analysis of core materials to determine the data, then carries on the rock properties and types of analysis, which can be more accurate grasp of rock facies, sedimentary structure, sedimentary cycle and the vertical sequence analysis, in order to form a more perfect integrated histogram, single well analysis is divided into the following two aspects: one is the
core phase of analysis. Based on the analysis of the characteristics of rocks and minerals, the mother rocks in the source area can be grasped more accurately, and the sediment transport can be understood according to the maturity parameters. It can also understand the sedimentary environment of the sediments. In addition, the characteristics of rocks and minerals have a great impact on the mining effect, especially clay minerals, which has a great impact on the waterflooding development of oilfield. The other is logging phase analysis. The main characteristics and assemblages of underground rocks are mainly shown by the amplitude and form of the electric survey curve, so the sedimentary facies is closely related to the logging direction, and this technique is also widely used in oil fields in China.

4.2 Sedimentary facies profile characteristics and plane distribution characteristics
Discovering and exploring the spatial distribution rules of oil sand bodies can more accurately grasp the spatial distribution forms of reservoir heterogeneity, and then formulate a detailed development plan, the most important basis of which is the plane combination and profile combination of sedimentary facies. Then, the assemblage, change and reservoir dynamic law of sedimentary facies in profile should be analyzed, and the specific situation of plane distribution should be understood, so as to more accurately understand the actual situation of sand body distribution and development as well as the shape of reservoir sand body, which is of great significance for oilfield exploitation. The sedimentary facies profile and plane distribution are used to develop oilfield in an orderly manner.

5. Analyze specific oil fields
1) to analyze the mining process of in certain oilfield as an example, the oilfield is a layered oil wet sandstone reservoir, after a study found that the anticline belt of reservoir, the work layer of sedimentary environment as a result of earlier braided river sedimentary evolution process of gradually delta deposit, on the basis of gradually developed into a river, estuary shoal and edge diara subfacies. Through the study of sedimentary facies, the actual situation of this area can be better understood and the basis can be provided for the smooth progress of mining. For the oil reservoirs, the formation structure and diagenetic epigenesis have certain influences on the heterogeneity of the oil reservoirs, but in practice, the law of injected water should be controlled through the sedimentation of accumulated facies. No matter which subphase the injection Wells are located in, the injected water enters the channel from a relatively near location. The injected water then enters the channel downstream, allowing it to flow upstream and sideways.

2) Taking an oil field as an example, in the process of applying sedimentary facies research in the oil field, this technology is mainly used to more accurately understand the distribution and type of oil-bearing sand body microtreatment by enriching logging and drilling data. Different microfacies have different oil-water movement laws, so more scientific development and construction schemes can be formulated, and specific measures can be effectively adjusted in practice to ensure its more scientific and reasonable. At present, this technology should be widely used in practice, and has achieved very good practical effects, such as increasing the selection of geological reserves development well pattern or local water injection.

Through the study of the above two oilfields, it can be found that the analysis of sedimentary facies can more accurately understand the actual situation of oil reservoirs. The production of oil Wells is also directly related to the thickness and permeability of bed sediments and the size of reservoir thickness. From the analysis of the actual situation of oilfield development at present, the application of this technology can improve the development effect better and ensure the exploitation work under stable conditions.

6. Conclusion
To sum up, the study of sedimentary facies is of great value and significance for the exploitation of oil and gas reservoirs. Application research of sedimentary facies can better analyze the reservoir characteristics of sediment, to better complete the geological exploration and mining workers, will also be able to accurately know the dynamic change information of oil field, for all kinds of sand body
prediction and development has an important mechanism, the current research of sedimentary facies is mainly single well sedimentary facies profile characteristics of sedimentary facies and plane distribution characteristic two aspects. According to the actual situation of current oilfield exploitation, sedimentary facies analysis and its wide application in China's oilfield exploitation have greatly improved the level and efficiency of exploitation technology, so this technology can play a greater role in the application of oilfield technology.

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