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Reservoir Characteristics

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Abstract: Big emotion well oilfield is located in the southern songliao basin in the central depression area in the middle of the changling sag, is the jilin oil field. Have a super Yi Dun Ji large lithologic reservoir group of reserve scale, because of the oil-bearing series is more; the workload is huge, to the objective interval in sedimentary facies sedimentary origin! The study of sedimentary structure characteristics and the lithology combination characteristics Low, thus unable to on the sedimentation rule of the work area of the whole system and comprehensive research, become the region the bottle neck of lithologic reservoir exploration and development.
Keywords: songliao; lithologic; objective; sedimentation; lithologic.

INTRODUCTION

In this article, through core observation and description, the integrated use of earthquake! Log! Trace element with the data of logging, etc. Element! Mudstone color value! Heavy mineral ZTR index! The ancient flow as well as the maturity of sandstone component analysis of the different interval. Area of the ancient sedimentary environment and provenance direction discrimination, emotion has been clear about the big well sedimentary facies in oil field, find out. The spatial and temporal distribution of sedimentary microfacies and reservoir sand body characteristics [1], sedimentary evolution model is established, with macroscopic and microscopic phase. Combination of comprehensive study of sand body microfacies, reservoir main controlling geological factors.

Reservoir petrology characteristics research

Reservoir petrology characteristics mainly include the reservoir rock types, rock composition, interstitial substance composition and the structure of the reservoir rock. They on the one hand, can control the development degree of primary pores in the reservoir, on the other hand, affect reservoir diagenetic evolution, further affect the growth of secondary pore characteristics, thus directly determines the reservoir property of the reservoir [2].

Rock types and basic characteristics

Focus on particle size through the clear water sag area 67 pieces of samples to study, it is concluded that the glutenite and the highest levels, fine sandstone lithologic percentage of 39.13% and 33.33%, anisometric sandstone second, accounted for 18.84%, mudstone content to 5.8% lower, only a small amount of siltstone and sandstone in the development, the lithology percentage were 1.45% (figure 1). From the rock composition of the key area of 39 samples study concluded that the area is mainly lithic arkose, feldspathic lithic sandstone and lithology of percentage were 50.7%, 34.33%, followed by arkose, accounted for 8.9%, only 5.97% of the lithic sandstone [3] (figure 2).

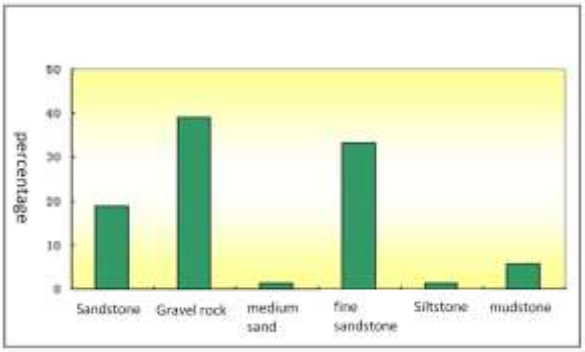

Fig.1: focus area rock granularity percentage to the sample diagram

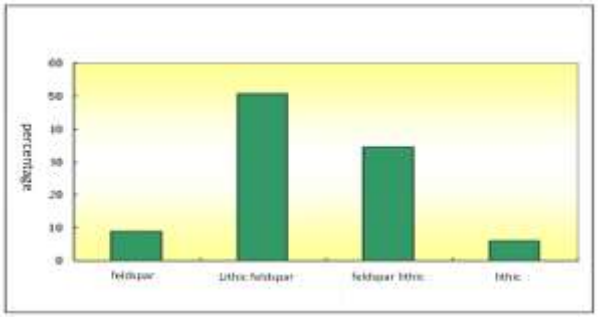

Fig. 2: focus area rock composition percentage to the sample diagram

Overall feldspar and lithic content is higher in the study area, but different horizon sandstone development degree, its content also have differences. Second section high quartz content, feldspar secondly, high current and compositional maturity; High content of sand three sections of the upper cuttings, feldspar containing times; Sand three central feldspar and cuttings is mixed, is still the lithic content on the high side; Three sections of lower high feldspar content, quartz times; Four period of lithic quartz sand content is higher (figure 3).

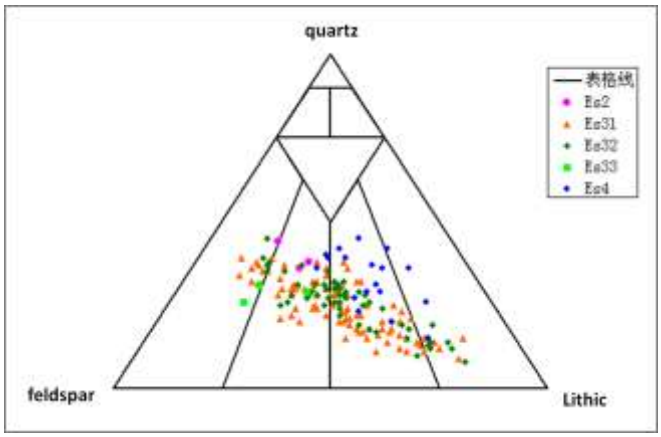

Fig. 3: water in rock type map

Through the rock types and basic characteristics of study: objective interval in the study area size coarse, lithic feldspar sandstone, fine sandstone and feldspar lithic development; The rock constituents content of quartz, feldspar and debris, which cuttings is a bit high, quartz and lithic times.

Detrital component characteristics

Detrital composition is mainly composed of quartz, feldspar and cuttings. Quartz is the most stable component, its content, the higher the reflecting compositional maturity, on behalf of the experience of handling, the longer abrasion. According to the water in a total of 20 Wells 144 sample points of thin section microscopic identification results of the statistics, analysis of the elastic component content characteristics in this region.

Quartz

Quartz for three kinds of debris, the most stable component in the higher levels, on behalf of the higher maturity, deposition when handling the longer abrasion. Objective interval quartz content in the study area range between 24% and 39%, average 32.85%.Quartz grain grinding is subangular more, visible overgrowth phenomenon, and with the increase of buried depth quartz content has a tendency to decrease, but content changed little [4] (figure 4).

Feldspar

Feldspar main types of potassium feldspar and plagioclase, the plagioclase content is slightly higher, the content range of 12% - 12%, 18.17%, the average content of potassium feldspar distribution range 7% to 26%, the average content of 15.7%.Objective interval in the study area within feldspar content in the range of 21% 46%, the average is about 31.5%, and with the increase of buried depth feldspar content had a tendency to rise slightly (figure 4). Feldspar dissolution, could easily mold pore, intergranular dissolved pore and intragranular dissolved pore, is advantageous to the reservoir storage capacity.

Cuttings

Cuttings refers to two or more of the debris of mineral grains, it is the parent rock fragments. High content of objective interval in the study area of cuttings, percentage range 26% to 60%, the average is about 35.89%.Cuttings content changing with depth

increase, in 3500-3800 - m lithic content change is big [5], its value is higher (figure 4).

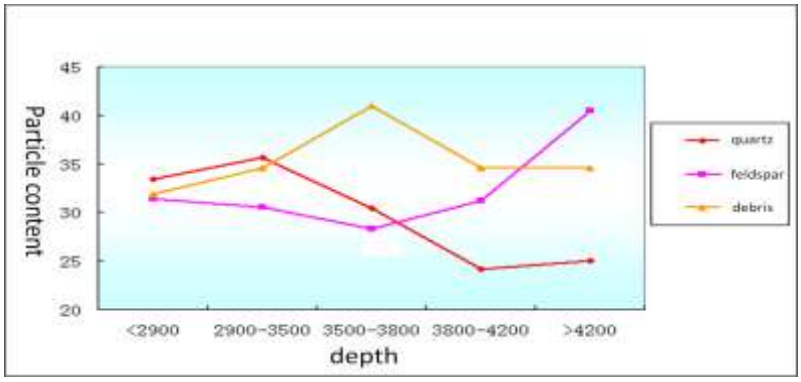

Fig. 4: detrital component percentage with depth variation

Structural features

Sub-sag, objective interval by water inside the granularity of the data such as the observation and study, it is concluded that the structure of the reservoir characteristics are as follows.

Grain size analysis

Clastic rock of the particle size distribution is a measure of energy deposition, is a good sign, discrimination of sedimentary hydrodynamic with larger effect on reservoir physical properties. Through to the grain size probability graph rolling, jumping, suspension components analysis can be used to preliminarily determine sedimentary energy.

Water in grain size probability cumulative figure data granularity distribution can be divided into four categories (figure 5): a class of gravity flow deposits (a), 2 kinds of gravity flow to the traction current transition lay particular stress on flow pattern (b), three types of gravity flow to the traction current transition partial traction current (c) (d), four kinds of traction current type. By category to the four types of granularity and the scroll component content is lower, bouncing components increase, reflect sedimentary energy abate, gravity flow to the traction current is gradually transition process [6].

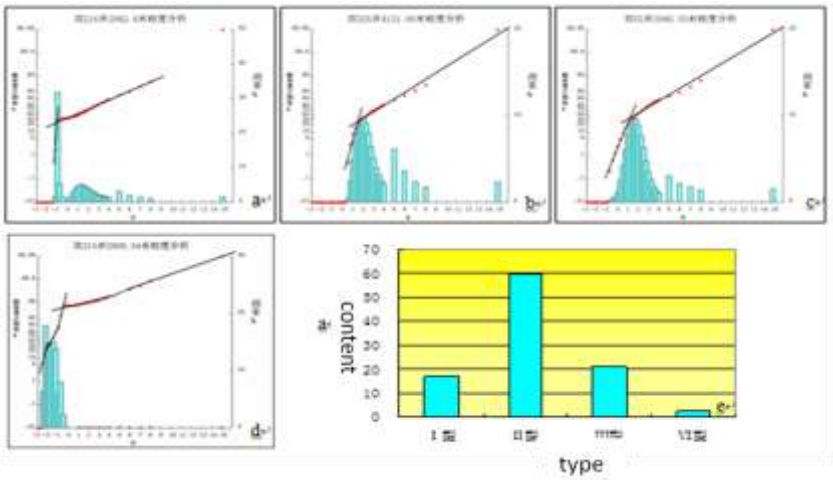

Fig. 5: water sub-sag, grain size analysis

Through the study of the efforts of all the sample point data classification statistical probability cumulative curves, it is concluded that water sub-sag, give priority to with second class, so the deposit for gravity flow to the traction current on power flow pattern transition (figure 5 e).

CONCLUSION

The key factors affecting the relationship between acoustic porosity is rock structure. The difference between secondary structure traits (mainly), Different kinds of rock structure. Have different acoustic) the relation between porosity, built according to the different diagenetic belt type. Porosity interpretation model has a reasonable geological and physical significance.

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