

Three Pond Status in Lake Basin Deposition and Its Evolution Characteristics

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Abstract: Elaborated the relationship between the geological factors of the composite petroleum system. Think three pond lake basin in up, middle and under three petroleum system. Petroleum system in monophyletic more storage period accumulation, composite oil, oil and gas from Permian LuCaoGou group, has early indosinian movement and the yanshan movement in the late two critical moment (mainly the former), system filling ability, the main reservoir of Permian LuCaoGou group and the, from the Jurassic system of high efficiency, resource density is big, is the main petroleum system; Petroleum system in oil and gas from the Triassic koizumi groove group, late yanshan movement period for the critical moment, duration of system from the late Triassic to the end of the age, in the white save time since late in the white world, oil and gas are mainly distributed in the sag Triassic source rock maturity, on the longitudinal is focused on the Jura.

Keywords: three pond lake basin, tectonic style, basin tectonic evolution and oil and gas accumulation zone, reservoir formation.

REGIONAL GEOGRAPHY

Three pond status in lake basin in xinjiang uygur autonomous region in the northeast, barkol kazak autonomous county is located in hami area, and our county territory, geographical coordinates in east longitude 91 ° 31 ' - 95 ° 45' and latitude 43 '25 ° , 5 ° 00' between; The west junggar basin, the south and in the hills of tuha basin, its northeast near the border of the republic of Mongolia [3]. North east edge of basin for ha just keshan - grams of kyzyt tower hill, south west edge for MoQin ural mountain; Basin in the north west - south east to the long strip; To calculate quaternary cover, about 500 km long, north and south about 40-50 km wide, about 70 km wide, most central basin area of 23000 km² According to formation rock assemblages, unconformity surface and the comprehensive analysis of the respect such as tectonic movement characteristics, combining with the basin formation structural deformation characteristics, the basin structural evolution stages, etc., can be a preliminary to three pond lake basin structural layer of bottom-up divided into structural layer of lower carboniferous Permian formations, upper carboniferous formations, and yanchang formation, cretaceous formations and Cenozoic structural layer [5].

THE SEDIMENTARY AND ITS EVOLUTION CHARACTERISTICS

According to the division of tectonic units in northern xinjiang region, and connecting with the regional tectonic evolution, sedimentation of the basin and the characteristics of the structure function analysis, the development of and three pond lake basin formation

can be have a close relationship between tectonic evolution is divided into fold basement formation, Permian before Paleozoic fold basement formation) basin formation and development two big stage. In different stages of development has its corresponding tectonic environment features and filling [2].

Basin fold basement strata formation stage

After the late devonian to carat mic collision orogenic belt and the east spring a Hal rick collision orogenic belt in the southern boundary [1]. This open pan basin depression, sedimentary environment as the late carboniferous copp - ginger bath the formation of the tectonic belt, extensive scope of sedimentary basin sag gradually toward the present three pond lake basin concentration range. Due to the development of the tectonic belt controlled by the regional stratigraphic occurrence uplift, the north hill to the upper carboniferous formation and development of han river springs area affected, lake sedimentary thickness is very thin from three pond - 4 Mao Hu region, at the same time the growth of orogenic belt of tectonic belt piedmont sedimentary development obviously, especially north of tectonic belt region, north hill area, wood library Sue, salt water fountain, etc. To late carboniferous epoch, north tianshan late Paleozoic ocean basin to reduce the lateral extrusion made by east spring - Hal rick collision orogenic belt in northern produced east spring horse cliff nappe tectonic belt, prompted the original pan basin sedimentary scope further north, pan basin range closer to the basin sedimentary range today. Penama centered, has the

good carboniferous sedimentary depressed tubulovillous adenoma [10].

THE COVER OF THE BASIN FORMATION EVOLUTION

Reference data and research of forefathers' research results, this article will be three pond lake basin of cap rock formation divided into three stages, namely P1 and P2 intracontinental rift basin in development stage, T2 + 3 - K depression basin developmental stage, N - Q strong thrust stage of orogeny and basin transformation.

P1 and P2 stage of intracontinental rift basin

Early Permian sedimentary period, the whole northern xinjiang region has experienced a post-tectonic crust tension effect. Three pond lake area in this kind of tension in the area under the background of present big fault, fault basin formation, mainly for the a set is characterized by coarse clastic and volcanic eruptions of tension grinding Shi Jianzao. Of Permian Carla subdivided under development across the whole basin, are mainly a set of continental volcanic clastic rock, tuff, a neutral small amounts of clastic sedimentary volcanic rocks. Scope of lake basin article focused on the lake and marange sag, depocenter and subsidence center in [14].

In Permian tectonic environment is relatively calm, lake basin sedimentary scope, research data show that the lake basin area is bigger than current basin area, south of laoshan is its southern margin, southern margin of the basin subsidence, sedimentary center mainly in the southwest of the marange sag, the main development reduction - half reduction environment of deep lake, and deep lake sedimentary. Strong magmatic activity during this period, forming two sets of large-scale partial basic volcanic rock deposits [8]. Over the same period of sedimentary black carbonaceous shale and carbonate rocks is an important one of the hydrocarbon source rocks of basin. The middle Permian LuCaoGou group with dark mudstone, shale and marl shale and silty mudstone clip, argillaceous dolomite, particle size of the water up into the sequence characteristics, shows that the lake basin area during the period of growing [9]. Permian series of lake group is piled up a large number of volcanic rock, siltstone, shale and thin coal seam of epicontinental swamp facies, lake basin show that the period has started to shrink. At the end of the late hercynian tectonic movement of late Permian in the north rim of the basin in the thrust at the same time accompanied by uplift of basin north of strata denudation, cause the whole characteristics of Permian strata in south to north thick thin, after the basin gradually to the development of depression basin, entering into depression basin sedimentary stage of development.

T2 + 3 - K depression basin development

After late Permian and early Triassic regional thrust up and cut the role of high fill low after middle-late Triassic sedimentary period, into three pond in lake

basin terrain elevation difference gradually converged, as a whole in a relatively stable state of depression, generally accepted Mr Koizumi groove group of sedimentary, look from the sedimentary characteristics, Mr Koizumi's groove group mainly for proximal relatively coarse clastic sediments of rivers and alluvial fan, the marange - square beam - Sue Luke a line for uplift zone, sedimentary article mainly concentrated in the han river springs - lake depression generation. Plane, the springs of han river and lake depression as the shallow lake facies, lake basin sedimentary and subsidence center article mainly concentrated in the southern sag pond and 1 well area, is a deep lake facies half deep lake facies, 4 Mao Hu and Jurassic gully development a set of coarse clastic braided river deposits, sedimentary characteristics on the overall performance of concave and convex and white pattern [15]. Basin for uplift area in southwest, the development of a set of proximal coarse clastic sedimentary.

The late cretaceous basin development is an important reform period. Triassic to early cretaceous basin is characterized by continuous slow subsidence basin, the early early cretaceous area north east south west to thrust began to develop in, and control the settlement of basin. At the end of early cretaceous late yanshan tectonic setting basin comprehensive uplift, dominated by the southern of the south and north of two-way thrust tectonic movement, the basin subsidence controlling factors of north and south transformation. In the central basin formed a series of ns of alluvial fan^[1]. The thrust nappe and strike-slip role within the basin at the same time also produced a series of secondary north east to parallel high Angle fracture tectonic belt. Early sedimentary strata denudation, the three pond lake area lack of upper cretaceous strata, marks the end of the depression of the basin stage.

N - Q strong compression thrust nappe and basin transformation stage

Tertiary period of later Himalayan movement is the continued late yanshan movement, the continuous extrusion caused three pond on either side of the lake basin to Carla mic - MaiQin ula and altai mountain uplift substantially, the three pond lake basin to the north and the south edge of nappe fault continue to thrust nappe, the three pond accelerating sedimentary basin and development of a set of typical piedmont proximal river, alluvial fan deposit, and the basin lower from north to south, west, north and south and low in zoning, things segmented deposition landscape pattern.

HYDROCARBON ACCUMULATION CHARACTERISTICS

Exploration show that the three pond lake basin accumulation system with multiple source reservoir, forming multiple petroleum system and monophyletic storage and accumulation, the characteristics of the composite petroliferous. This complex reservoiring system caused great difficulties for deep exploration.

This article focuses on the petroleum system in oil and gas accumulation feature, spatial distribution, and then evaluate the exploration targets in each system, in order to correctly guide the exploration [6].

The core issue of petroleum system research is a crucial moment for hydrocarbon accumulation [9]. From the point of view of geological evolution, the oil in a particular area of generation, migration and accumulation is usually happens in a very short period of time, the key moment of the petroleum system is the system most of the oil and gas generation a migration accumulation in the short time.

OIL AND GAS EXPLORATION PROSPECT

Has been found that the accumulation of advantage region cow lake, north lake two oilfields, control oil geological reserves of 7341 x 104 t, predicting oil geological reserves of 3383 x 104 t, basin has exploration prospects.

Cerard Demaision source rock potential index put forward by the Isp, meaning is "the degree of hydrocarbon source YanFeng and net thickness of hydrocarbon source rocks integrated into a single parameter, which is to compare different kerogen of the oil and gas potential of different hydrocarbon source rocks and oil and gas ability of a quick estimate area convenient shortcut". Different exploration area the size of the source rock potential index and there is a positive correlation between in the reserves [12]. Such as Cerard Demaision 36 oilfield, on a global scale to calculate the level of source rock potential index is proposed. Defined in lateral hydrocarbon expulsion system of source rocks potential index of type boundary value is: lower source rock potential index < 2, the secondary source rock potential index for 2 ~ 7, higher source rock potential index > 7; In vertical hydrocarbon expulsion of hydrocarbon source rock potential index in the system level limit value is: lower source rock potential index of 5 or less, secondary source rock potential index 5 ~ 15, higher source rock potential index of the latter to three pond lake basin for [13]. With lower source rock potential index value hydrocarbon source rocks of the region, said to small and medium gas fields of small and medium-sized oil and gas reserves, production or not expected, with Gao Yuanyan potential index of hydrocarbon source rock is related to large oil and gas reserves [11].

According to the geological conditions of three pond lake basin, the exploration target strata should be above the Permian series LuCaoGou group is given priority to, LuCaoGou group the most favourable area near the southern piedmont of hydrocarbon generation, conjecture about 8 km [10], piedmont overlap bandwidth piedmont and overlap of the belt should be below is favorable exploration area. Know the current piedmont geological structure is the biggest difficult mountain seismic data quality is bad, if mountain

earthquake can pass a barrier, will make a qualitative breakthrough in oil and gas exploration targets in this basin.

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