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Depositional filling model and subtle traps distribution in continental faulted basin tightly controlled by faulting and lake level

Dong D.T.¹, Qiu L.W.¹, Yang Y.Q.¹

¹School of Geosciences in China University of Petroleum, Qingdao, China, 266580, dongdaotao@qq.com

In order to further figure out the subtle trap reservoir distribution in the rift basin in the Paleogene Shahejie Group, we chose upper Es4 and Es3(Es4s~Es3) in Paleogene, which located in in eastern- Gubei Sub-sag in Jiyang Depression, as object of study. Guided by the terrestrial sequence stratigraphy, and based on core data, well logging data, test analysis, seismic data, combined with the geologic settings[1~4] , we got a conclusion that Es4s~Es3 is a complete second grade sequence, which is located between the bottom of Es1 (deep lake deposit) and the lower Es4~Ek(layer red). What's more, we identified 3 third grade sequences and 8 parasequence formations, and also understood the stratigraphic contact relationship and the position of onlap and truncation of the sedimentary strata in the study area. We also established the high resolution sequence stratigraphic framework of Es4s~Es3 in Paleogene eastern Gubei Sub-sag under the control of the lake level and tectonic.

In the study area, Es4s~Es3 mainly includes 3 sedimentary system: delta, fan delta and (semi-)deep lake-slump fan. The depositional filling and sandbodies distribution can be summed up as three phases close contact with fault activity and lake level cyclical change: intrabasinal filling and leveling up, onlap and fully filled. Finally put forward the (hidden) trap development mode suitable for the tectonic pattern of "deep sub belt(filling and leveling up)-fault terrace zone(onlap)-slope zone(progradation and top truncated)" in the medium-deep burial strata of multiple faulted basin in East China: **main body of delta**, which located in deep sub-sag belt, formed in early stage, **develop lithologic-anticline** traps and numerous sand-lens traps in lateral margin, faulted-stage zone mainly **develop** 4 stratigraphic onlap traps along the overlap line formed in medium onlap stage, slope zone mainly **develop** 3 stratigraphic erosin unconformity traps close to nip-out line, another 2 fan delta sandbodies constitute independent and unconnected sand body because its roots erosion and **develop** lithology-structure traps. After comprehension of above achievements, combined with the well testing data, we pointed out 4 new favorable zones in the study area which gained the acceptance of Shengli Oilfield Company, SINOPEC.

References:

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