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### Reserves classification and well pattern infilling adjustment in tight sandstone gas field

Sulige gas field is typical of tight sandstone gas field in China. The reservoir property is poor, the effective sand bodies are with small scale, low distribution frequency and strong heterogeneity, and various development blocks differ greatly from others. It is difficult to exploit the reserves effectively relying on the current developing well pattern of 600m×800m, with recovery rate only about 30%. Thus it is necessary to evaluate various types of reserves comprehensively and implement well pattern infilling adjustment respectively. Choosing Su14 block in central Sulige as the study area, through fine reservoir description in dense well pattern and interference well test analysis, the reservoir development frequency and scale was studied. With braided-river sedimentary facies as the constraint, integrating reserves abundance value, reservoir superimposed style, poor gas layers influence and dynamic characterization, reserves of the gas field

were classified into five types. From reserve types I to V, reservoir thickness gets thinned, reservoir continuity becomes poorer, reserves grade turns down and well production performance is worse. Compared actual production data with modeling & simulation result, the relation of well pattern density, interference degree and recovery rate was researched for each type of reserves. In the existing economic and technical conditions, the reasonable well pattern density in various type of reserves area is 2~4 wells per square kilometers, and the ultimate recovery rate is about 50%. This research, makes reserves configuration clear in the tight sandstone gas field, provides geological basis for well pattern infilling adjustment in later development stage, lays a solid foundation for long-term stable production of gas field, and is also of certain reference significance to other gas field development under similar geological conditions.

#### Biography

Guo Zhi got his PhD degree at PetroChina Research Institute of Petroleum Exploration and Development in 2014 and has engaged in his career for about 10 years. His major is Oil & Gas development geology. He has made some progress in reservoir description, geology modeling, reserves classification and horizontal well optimization for tight sand gas, publishing more than 10 influential papers both home and abroad.

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