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Recovery rate calculation method of large tight sand stone gas field

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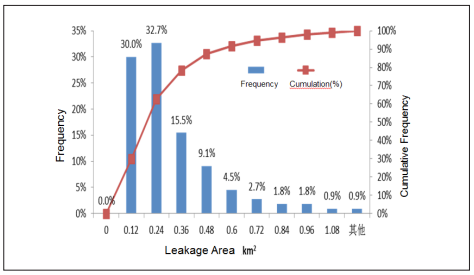
Large tight sand stone gas field are characterized with big gas bearing area, poor reservoir property, strong heterogeneity and enormous scale of reserves and production. For tight sand stone gas field, recovery rate and the ultimate production are the key indicators to guide long-term stable development, make development technical strategies and evaluate the development effect. Due to its small pore and throat, and complex seepage mechanism, tight sand gas is difficult to obtain accurate recovery data by conventional laboratory simulation methods. Taking Sulige large tight sandstone gas field as the research object, typical blocks are selected from the central, east, west and south zone to carry out detailed anatomy and production wells are classified into three types according to the geological characteristics and development effect. The area ratios of various wells zone are restricted by sedimentary facies distribution. Choosing a large number of wells with long production history and in the quasi-steady-state for analysis samples, using rate transient analysis and production curvilinear integral methods, the dynamic reserves and the ultimate production are evaluated for each type of well. Integrating reservoir scale, structure, production dynamic characteristics and single wells control scope is determined. The technical limited production, producing reserves and recovery rates are simulated considering the well pattern would be in filled with a high density. The research result shows that the technical limited recovery rate of the gas field is 71.2~78.5% average 75.3%, while that of conventional gas reservoirs is 80~90%. The gas field has a technical limited production of 1.96 trillion square meters and the current economic limited production is 1.17 trillion square meters. In the future with the technology improvement and the development cost reduction, the production of gas field will increase by 0.79 trillion square meters.



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Biography

Guo Jianlin pursued his BSc degree in Petroleum Geology from the China University of Geo Science and his MS and PhD degrees from Research Institute of Petroleum Exploration & Development (RIPED), Beijing, China. He has worked in the areas of oil and gas geology, reservoir modeling and engineering. He is currently a Senior Engineer of Department of Natural Gas Development, RIPED. He is working mainly on gas development.

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