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Geological evaluation methods for shale gas

页岩气地质评价方法

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. This standard by the National Standardization Technical Committee of Oil and Gas (SAC/TC355) and focal points. This standard was drafted. China Planning Institute of Petroleum Resources Petroleum Exploration and Development Research Institute, PetroChina Southwest Oil and Gas Field Branch of Chinese exploration Development Research Institute, Sinopec China Petroleum Exploration and Development Research Institute, Southwest Petroleum University. The main drafters of this standard. to Zou, Dong Dazhong, Wang Man, Huangxu Nan, Li Jianzhong, Li Xinjing, Huang Jinliang, WANG Shu-fang, the whole tube, Chen rehabilitated, Wang Lansheng, Wangshi Qian, Zhang Jian, Xiang Longsheng, Zong whole, Wu Xiaoling, Zhao Jinzhou, Jiangyu Jiang, Wang Zhi.

Shale gas has become the world's natural gas exploration and development of important new fields. China shale gas resource potential is large, it has made shale gas Industrial production test pilot, but the shale gas exploration and development is still at an initial stage. In order to regulate shale gas geological evaluation methods, and then to China shale gas exploration and development policy development, scientific research, the results provide the basis for evaluation standard is formulated to meet the Chinese shale gas development It needs. Shale gas geological evaluation method

1 Scope

China's national standard for the geological evaluation of shale gas. It specifies the definition of shale gas and the content, methods and parameters of geological evaluation, and it applies to geological evaluation in shale gas exploration and development. It defines shale gas as natural gas occurring in free and adsorbed states, principally within an organic-rich shale interval, in a continuous accumulation that is self-sourcing and self-storing within the same body of rock. Under overburden pressure the matrix permeability of such a shale is generally not greater than about one microdarcy, and a well generally has no natural productive capacity: industrial gas rates are obtained only through stimulation. That definition contains the whole difficulty of the subject. In a conventional gas

field the source rock generates gas, the gas migrates, and it accumulates in a permeable reservoir beneath a seal, so evaluation asks where the trap is and how much it holds. In shale gas none of those steps happens: the source rock is the reservoir, there is no trap and no discrete accumulation, and the resource is spread continuously through a formation across an entire basin. What determines whether it can be produced is not structure but the rock itself - its organic carbon content, its thermal maturity, its mineral composition and therefore its brittleness, its porosity and gas content, its thickness and its pressure. The standard was written as China's shale gas industry moved from pilot production towards development, to regulate the evaluation methods and to provide a basis for policy, research and assessment. Issued on 15 May 2015 and in force since 1 October 2015.

This standard specifies the definition of shale gas, geological evaluation of the content, method and parameters. This standard applies to shale gas exploration and development of geological evaluation.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document. SY/T 5336 core analysis methods SY/T 5368 rock thin section SY/T 5440 Gas Well Testing Specification

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Shale gas shalegas Shale gas is natural gas free state, adsorbed mainly occurs in organic-rich shale section, the upper body is self-generating and self storage, the Omo Plot continuous gas accumulation. Under overburden pressure conditions, the shale matrix permeability is generally less than or equal to $0.001 \times 10^{-3} \mu\text{m}^2$, generally no single well Natural production capacity needs to get through certain technical measures industrial air.

3.2 Shale shale Particle size less than 0.0625mm from the debris, clay, organic matter, etc., with foliation, friable fine-grained sedimentary rocks.

3.3 Organic-rich shale organic-richshale Organic carbon content of marine rocks more than 2.0%, 1% more than other types of dark shale.

3.4 Organic-rich shale intervals organic-richshaleinterval Organic-rich shales and organic-rich shales and siltstone, fine sandstone, carbonate rocks thin interlayer stratigraphic units.

Note. The Mezzanine thin layer thickness of not more than 1m, cumulative thin interlayer thickness ratio of the total thickness of the rock section of the page is less than 20%.

3.5 Matrix permeability in-situmatrixpermeability Without using crack shale core (matrix) in

the net effect of the overburden rock pressure measurement of permeability.

4 Shale gas geological evaluation method

4.1 Screening and preparation of rock samples Drilling and coring program wellsite core processing performed by the SY/T 5336, outcrop sampling program and on-site rock samples processed in SY/T 5368 Executive

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