

论文

樊庄区块煤层气井产能差异的关键地质影响因素及其控制机理

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摘要:

以樊庄区块16口煤层气井地质资料、排采资料为依据,分析了该区块煤层气井之间产水量和产气量差异的地质影响因素,并进一步探讨了这种差异的地质控制机理。研究表明:产水阶段,地下水流体势通过影响煤层水的流向和煤储层含水量控制煤层气井产水量,渗透率通过影响煤层水在储层中的流动能力控制煤层气井的产水量,煤储层渗透率与地下水流体势的负相关性促进了煤层气井之间产水量的差异;产气阶段,排水降压效果通过影响煤层气的解吸量及气、水两相的饱和度和相对渗透率控制煤层气井之间的产水量和产气量差异;另外,煤层气井连通后出现的气水分异现象,进一步促进了煤层气井之间产水量、产气量的差异。

关键词: 樊庄区块; 煤层气井; 产能; 流体势; 渗透率; 气水分异

Key geologic factors and control mechanisms of water production and gas production divergences between CBM wells in Fanzhuang block

Abstract:

Production characteristics of coal bed methane(CBM) wells in Fanzhuang block were studied.Geologic factors that affect divergences of water production and gas production between CBM wells were analyzed on the basis of geologic information and production data of 16 CBM wells.Geologic control mechanisms of the divergences were further studied.The results show that, in well dewatering stage, ground water fluid potential controls water production of CBM wells by affecting the flow directions of water and moisture content of coal bed reservoir.Permeability controls water production by affecting the flow capacity of water in coal bed.The negative correlation between ground water fluid potential and permeability accelerates the divergences of water production between CBM wells.In gas production stage, the decompression effect controls the divergences of water production and gas production by affecting the amount of desorption methane, saturation degree and effective permeability of water and gas in coal bed.If adjacent CBM wells are connected, gas/water separation in coal bed further accelerates the divergences of water production and gas production between CBM wells.

Keywords: Fanzhuang block; CBM well; deliverability; fluid potential; permeability; gas/water separation

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