

- [18] 邹才能,董大忠,王社教,等.中国页岩气形成机理,地质特征及资源潜力[J].石油勘探与开发,2010,37(6):641-653.
Zou Caineng, Dong Dazhong, Wang Shejiao, et al. Geological Characteristics, Formation Mechanism and Resource Potential of Shale Gas in China [J]. Petroleum Exploration and Development, 2010, 37 (6) : 641 - 653.
- [19] Diaz-Perez A, Cortes-Monroy I, Roegiers J C. The Role of Water/Clay Interaction in the Shale Characterization [J]. Journal of Petroleum Science and Engineering, 2007, 58 (1 - 2): 83 - 98.
- [20] 王茂桢,柳少波,任拥军,等.页岩气储层粘土矿物孔隙特征及其甲烷吸附作用[J].地质论评,2015,61(1):207-216.
Wang Maozhen, Liu Shaobo, Ren Yongjun, et al. Pore Characteristics and Methane Adsorption of Clay Minerals in Shale Gas Reservoir [J]. Geological Review, 2015, 61 (1) : 207 - 216.
- [21] Hill D G, Lombardi T E, Martin J P. Fractured Shale Gas Potential in New York [J]. Northeastern Geology and Environmental Sciences, 2004, 26 (1/2) : 57 - 78.
- [22] Zhang Baoying, Xu Jingling. Methods for the Evaluation of Water Saturation Considering TOC in Shale Reservoirs [J]. Journal of Natural Gas Science and Engineering, 2016, 36: 800 - 810.
- [23] 李俊平,连民杰.矿山岩石力学[M].北京:冶金工业出版社,2011:57.
Li Junping, Lian Minjie. Mine Rock Mechanics [M]. Beijing: Metallurgical Industry Press, 2011 : 57.
- [24] 冒海军,郭印同,王光进,等.黏土矿物组构对水化作用影响评价[J].岩土力学,2010,31(9):2723-2728.
Mao Haijun, Guo Yintong, Wang Guangjin, et al. Evaluation of Impact of Clay Mineral Fabrics on Hydration Process [J]. Rock and Soil Mechanics, 2010, 31 (9) : 2723 - 2728.
- [25] 薛华庆,周尚文,蒋雅丽,等.水化作用对页岩微观结构与物性的影响[J].石油勘探与开发,2018,45(6):1075 - 1081.
Xue Huaqing, Zhou Shangwen, Jiang Yali, et al. Effects of Hydration on the Microstructure and Physical Properties of Shale [J]. Petroleum Exploration and Development, 2018, 45 (6) : 1075 - 1081.
- [26] Liu Xiangjun, Zeng Wei, Liang Lixi, et al. Experimental Study on Hydration Damage Mechanism of Shale from the Longmaxi Formation in Southern Sichuan Basin, China [J]. Petroleum, 2016, 2 (1) : 54 - 60.
- [27] Kazemi H, Merrill Jr L S, Porterfield K L, et al. Numerical Simulation of Water-Oil Flow in Naturally Fractured Reservoirs [J]. Society of Petroleum Engineers Journal, 1976, 16 (6) : 317 - 326.



我国首个页岩气勘探开发国家环保标准发布

2020年11月18日,由川庆钻探公司主编、国内5家单位参编的GB/T 39139.1-2020《页岩气环境保护第1部分:钻井作业污染防治与处置方法》获得国家市场监督管理总局和国家标准化管理委员会批准发布实施,这是我国第一个页岩气勘探开发的国家环保标准。

川庆钻探公司是国家级页岩气开发示范区威远—长宁区域的主要建设与施工单位,从拉开我国页岩气开发序幕的“中国第一口页岩气井”威201井就开始了页岩气钻井作业环境保护技术的探索,钻井现场的环保工作得到社会及行业广泛认可。

本标准以川庆钻探公司在页岩气钻井作业中的成功环保技术措施为基础,涉及页岩气的钻井作业源头控制、过程控制、废物收集与处理、完井环保要求等多个方面。

(曾妍 摘自中国石油新闻中心)