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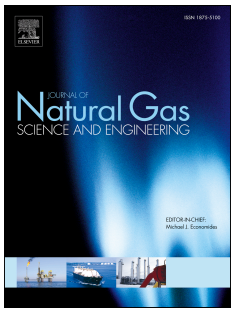

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Production Behavior and Numerical Analysis for 2017 Methane Hydrate Extraction Test of Shenhu, South China Sea

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Abstract: As one promising energy resource, methane hydrate (MH) has extracted worldwide attention in recent years. In 2017, a new series of methane hydrate (MH) extraction tests was executed both in China (Shenhu Area, South China Sea) and Japan (Nankai Trough), which led to new round of intense scientific research and engineering developments toward the common goal of robust production technology. This study is focused on the production behavior analysis and numerical predictions for 2017 tests in Shenhu Area, South China Sea. Based on the open production data, the detailed production process, characteristics and future prospects are re-constructed and numerically discussed, so as to provide a general view of the production behaviors and potential prediction in this region. Numerical simulations on the mid-term (60 days) production process are designed and found good agreement with the real production tests, where the short- to mid-term production rate is estimated to drop from 3.5×10^4 m^3/d to around 2.0×10^3 m^3/d within 60 days, which is then extended for mid- to long-term (2-3 years) prediction of gas production. Parameter behaviors and field information such as the near-wellbore effects are also discussed into detail based on the numerical results. In addition, future concerns based on recent tests in China and Japan in 2017 are also included in this study, so as to provide a general viewpoint for oceanic methane hydrate extraction.

Keywords: Methane hydrate, Energy resource, Shenhu Area, South China Sea, Production behavior

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