THE STUDY ON DRILLING FLUID FOR DRILLING IN MARINE NATURAL GAS HYDRATE BEARING FORMATION

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ABSTRACT
Drilling is the most direct and indispensible way to explore the abundant resource of natural gas hydrate buried in marine sediments. Because of the unique characteristic of gas hydrate, drilling in gas hydrate bearing formations more demanding compared with well drilling in common oil gas sediments, and makes the wells confronted with difficult problems. Minimizing gas hydrate dissociation at bottomhole and controlling the reformation of hydrate within drilling fluid is essential to maintain the stability of the borehole and ensure the success of drilling operation in gas hydrate bearing sediments. In this work, we proposed an approach to use low temperature drilling fluid with addition of a combination of thermodynamic and kinetic gas hydrate inhibitors. We designed an apparatus that can simulate the situation during the process of gas hydrate drilling and circulating the drilling fluid in the high pressure autoclave. The results confirmed that the formulated water based drilling fluid can effectively inhibit gas hydrate dissociation and reformation that maybe applied in the natural gas hydrate drilling test offshore South China Sea in the near future.