



Dongsha Area Gas-hydrate Petroleum System in northern Slope of the South China Sea

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In recent years, significant progress has been made in addressing key issues on the formation, occurrence, and stability of gas hydrate in nature. The concept of a gas-hydrate petroleum system, similar to the system that guides current conventional oil and gas exploration, is gaining acceptance. A gas-hydrate petroleum systems model is a digital data model of a gas-hydrate petroleum system in which the interrelated processes and their results can be simulated by numerical modeling. A new module of gas-hydrate petroleum system simulating can predict the thickness of the gas hydrate stability field, the generation and migration of biogenic and thermogenic methane gas, and its accumulation as gas hydrates in gas hydrate stability field. Dongsha area is located to eastern part of the Pearl River Mouth basin, and is one of the key hydrate-exploration areas in China. However, the gas hydrate petroleum system and basin modeling in Dongsha area haven't been paid enough attention. In the paper, geological conditions for gas hydrate formation have been naturally prepared on the Dong sha area. The paper first analyzed the geological-tectonic conditions of gas hydrate formation in Dongsha area, and selected the typical sections in Dong sha uplift area and southwest taiwan basin. The geological models of gas hydrate reservoir in the two study area were constructed through the typical seismic image. The typical seismic lines are obtained from the two study area by Guangzhou Marine Geological Survey. In combination with physical, thermal and geochemical data, the match condition of gas hydrate formation was studied by sedimentary basin simulation technique. The research results is as followed: 1. In southwest taiwan basin Basin, thermal developing history is low in deep department stratum, Source of gas of hydrate come from shallower biogenic gas; 2. In Dongsha uplift areas, the thickness of Cenozoic is thin and the Sediment is limited, so biogenic gas was scarce, Source of gas of hydrate come from a nearby depression; 3. Comparatively speaking, southwest taiwan basin is a better area for gas hydrate formation.