

# Influencing Factors of Late Activation Fault Development and Its Control Effect on Natural Gas Loss in the Xihu Sag, Southeast China

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## Abstract

The Xihu sag has strong fault activity, which results in the differences in natural gas enrichment and accumulation. However, the influence of late activation faults on gas reservoirs is still unclear. Therefore, the impacts on late activation faults and accumulation of natural gas are very important for the further exploration in the study area. Based on the study of the early structures and late fault development characteristics of the Xihu Sag, SE China, the QGF and QGFE experiments were used to study the relationship between the paleo-gas reservoir and the current gas reservoir. It is found that the basement structures and early faults combination of the Xihu Sag determine the size of the trap, which affected the development of late activation faults, and the late activation fracture strength and deposition rate controlled the natural gas loss process. When activate faults' activity rates of the Liulang Formation were more than 5m/Ma, and the sedimentation rates of the Liulang Formation were more than 30m/Ma, the fault activities were strong and the gas reservoirs were destroyed. The development of late activation faults were greatly influenced by the early structures. The activation faults were obviously active in the sedimentary period of Liulang Formation, and the faults often cut across the gas reservoirs. The QGF and QGFE experiments all show that the ancient gas reservoirs were destroyed, and the late activation faults were the one of the main factors, which destructed the gas reservoirs.