



STUDY ON GAS GENERATION HISTORY AND ACCUMULATION HISTORY IN THE XUJIAWEIZI FAULT DEPRESSION OF THE SONGLIAO BASIN IN CHINA

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The Xujiaweizi fault depression lies in the Songliao basin of the northeastern part of China. It is rich in natural gas resources in Early Cretaceous. With the increasing importance of unconventional oil and gas, the proportion of unconventional oil and gas is increasing in the new reserves and production. In recent years, the Xujiaweizi fault depression exploration by the volcanic reservoir extended to tight sandy conglomerate reservoir. It is important to study on gas generation history and accumulation history for guiding the exploration and deployment.

The Xujiaweizi fault depression is divided into three areas, which are Anda area, Xuxi area and Xudong area respectively. The main source rock is the coal bearing mudstone of Shahezi formation. Stratigraphic framework of the Xujiaweizi fault depression was established by using Trinity software for studying about gas generation history. Study on accumulation timing by fluid inclusion analysis. The pore pressure variation caused by hydrocarbon generation was modelled by using PetroMod software. The research conclusions are as follows.

(1) Gas generation history: The main period of gas generation is 104~72Ma in the Xujiaweizi fault depression. There are four peaks of gas generation in the Xujiaweizi fault depression, which are 99Ma, 95Ma, 85Ma and 80~76Ma respectively. The peaks of gas generation are different in three areas. The peaks of gas generation of Xuxi area are 99Ma, 95Ma and 85Ma, and similar to XuDong area. The peaks of gas generation of Anda area are later than Xuxi area and XuDong area that are 95Ma, 85Ma and 76Ma. (Figure 1)

(2) Accumulation history: The main period of accumulation is 97~84Ma in Xuxi area and XuDong area. The main period of accumulation in Anda area is 90~72Ma. Gas reservoir formed after the first gas generation peak.

(3) Pore pressure: The results show that the pore pressure of source rocks is obviously increased after the first gas generation peak, and the primary migration dynamics of tight gas is mainly gas generating pressurization, and the second migration dynamics is dominated by diffusion.

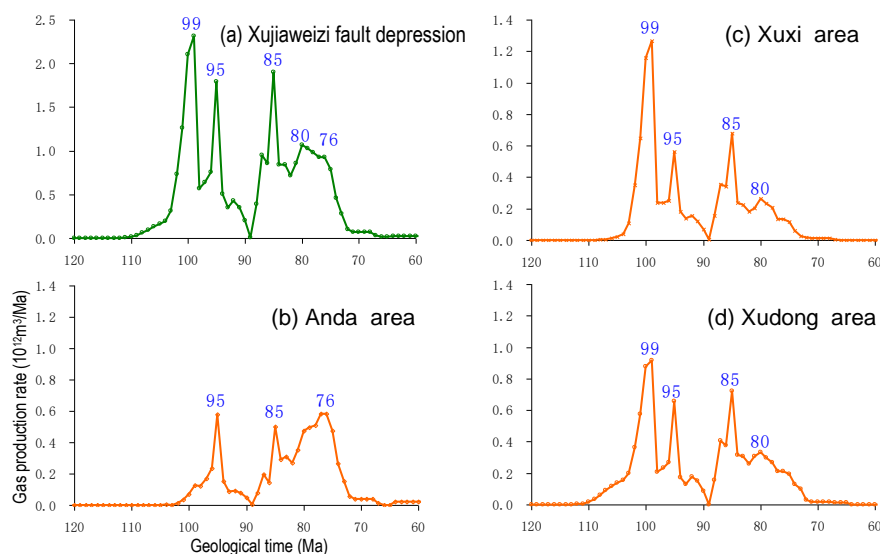


Figure 1 Gas generation history diagram of Shahezi formation in the Xujiaweizi fault depression of the Songliao basin in China.