Geophysical Research Abstracts
Vol. 21, EGU2019-5611-1, 2019
EGU General Assembly 2019

The Relationship between the Paleo-pressure and Hydrocarbon Migration and Accumulation in Bonan Sag

Ziyue Jiang, Hua Liu, Yuelin Feng, Caixinda Yu, and Guoqi Song
China University of Petroleum (East China), LABORATORY OF DEEP OIL AND GAS, China (17854222359@163.com)

In order to characterize the influence of paleo-pressure during hydrocarbon migration and accumulation, taking the sandstone reservoir of the Es3 in Bonan sag as the research object, obtained the gas-liquid ratio and compositions data of the fluid inclusions by using confocal laser scanning and Raman spectra tests. Then, the fluid inclusions PVTX simulation method was used to restore the paleo-pressure during the hydrocarbon charging period, and the relationship between paleo-pressure and hydrocarbon migration power or directions during the main accumulation period was clarified.
According to the fluorescence characteristics, homogenization temperature and freezing point information of the oil inclusions and salt water inclusions, it is determined that the reservoirs of the Es3 in Bonan Sag have two hydrocarbon charging periods, including Dongying and Minghuazhen stages. In these two periods, the Minghuazhen period as the main charging period, about 4-5 Ma from the present, the value of the paleo-pressure in the Es3 is 29.50-35.97MPa, with the different paleo-pressure distribution in different structural zones. The paleo-pressure value of the source area is higher than other structural zones, and its average value of paleo-pressure is 34 MPa. The paleo-pressure in North steep slope and the stepped belt is inhomogeneous, the highest is 35.31 MPa but the lowest is only 29.94 MPa. In South gentle slope the average paleo-pressure value is low, only 31.5 MPa. The source area with high paleo-pressure has strong charging power where the paleo-pressure decreases, the hydrocarbon tends to accumulate. In North steep slope and the stepped belt this relationship is opposite, the hydrocarbon accumulate followed with high paleo-pressure distribution. The relationship between the paleo-pressure and the hydrocarbon migration and accumulation in South gentle slope are weak.

Key words: Bonan sag; Paleo-pressure; Fluid inclusion; Hydrocarbon migration and accumulation