

## **Geologic significance and assessment technique of "sweet area (interval)" in unconventional shale system**

YANG, Z.\* , ZOU, C.N. , WU, S.T. , PAN, S.Q.

Research Institute of Petroleum Exploration & Development,  
PetroChina, Beijing 100083, China

Unconventional oil in dark shale system comes in tight oil and shale oil two forms. "Oil exploration into source rock" involves exploration of shale oil retained in source rocks and tight oil rich zones near source rocks. Based on systematic comparison of geologic features of shale system in the US and China, geologic significance of "sweet area (interval)" in shale system has been proposed. The "sweet area (interval)" refer to the zone (interval) with rich in unconventional oil in shale system where source and reservoir coexist that can be explored and developed in priority under the current economic and technical conditions; the "sweet area" refers to the zone the tight oil rich zone with industrial value within the scope of matured high-quality source rock on the plane; the "sweet spot interval" refers to the high-productivity interval of tight oil with industrial value through artificial stimulation in dark shale system with co-existent source 25 and reservoir beds. Identification of "sweet area (interval)" is the core of "oil exploration in source rock" in shale system. The distribution of the "economic sweet area (interval)" in shale system is evaluated by overlapping the "geologic sweet areas (intervals)", "engineering sweet areas (intervals)" and "economic sweet areas (intervals)". Resource assessment techniques, identification of "six properties" by logging data, high-resolution 3D seismic survey, horizontal well production from wellpad, artificial reservoir development and other assessment techniques for "sweet areas (intervals)" in oil-bearing shale system can provide reliable supports for high-efficiency development of oil in shale system. Shale system contain huge oil reserves. To develop oil in lacustrine shale system in China in large scale, it is necessary to take advantage of the large formation thickness and high organic matter abundance. In addition, practical and economic techniques shall be developed in all possible ways to achieve the increase of tight oil and shale oil productivity of 30 to 50 million tons and economic development of oil in lacustrine shale system in China.

Key words: sweet area(interval); oil exploration into source rock; shale system; tight oil; shale oil; unconventional oil and gas geology

\*Corresponding author.

E-mail address: yangzhi2009@petrochina.com.cn