



Seismic patterns and migration history of submarine fan channels in deep-water area, Niger Delta, West Africa

Guotao Zhang (1), Shangfeng Zhang (2), and Yuan Li (3)

(1) Wuhan Center of Geological Survey, China Geological Survey, Wuhan, China (kapsino@163.com), (2) Department of Earth Sciences, Yangtze University, Jingzhou, China (jpuzhangsf@163.com), (3) Key Laboratory of Tectonics and Petroleum Resources, Ministry of Education, Faculty of Earth Resources, China University of Geosciences, Wuhan, China (liyuan_28@163.com)

The channels of deep-water submarine fan under Niger delta slope are characterized by large dimensions special deposition positions and complex formation processes, its geographical location and sedimentary environment also hinder the research and exploration development. According to the strata slicing, RMS amplitude attribute and other techniques, we exhibit the platforms patterns of channels at different period, and based on the analysis of internal architecture and deformation history of channel-leveed systems, migration and evolution process of channel systems could be understood accurately. A great quantity of isolated channels develop in middle Miocene and aggrading streams in late Miocene, which generating because of large scale of turbidity caused by the drop of second order sea-level, which characterized by vertical accretion at smooth channel, while vertical accretion and lateral migration at bend. Evolution of channel systems can be divided into three stages: the initial erosion, erosion and filling alternately, and abandoned stage. With these three stages, the sinuosity of channel change from moderate to high, then decrease. Incision and filling of channels, being during the three development phases, is the driving force of meander-loops migration, which promote three kinds of migration patterns: lateral, down-system and combination migration. The research provides theoretical basis for high-precision prediction and evaluation of deep-water reservoir.