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**A Deep Water Reservoir of the Sub-Lacustrine Fan in Dongying Depression, China**

A large sub-lacustrine fan was discovered in the Member 3 of the Shahejie Formation in the lower Tertiary in the Liangjialou area of the southwest Dongying Depression, though river and delta sandstones were major reservoirs in the Depression. The Liangjialou fan is about 175km<sup>2</sup> area and with deep-water features in their sedimentary succession. Sub-aqueous channels with fillings of conglomeratic sandstones are reservoir framework of the fan, which are subdivided into the main channel, branched channel and tip channel. Between the channels there are sandy lobes and lacustrine shales. At front of the fan, channel-mouth lobes are deposited. Based on high resolution of stratigraphic sequence, the deposition process of the fan was first in highstand system tract, then in lowstand system tract, and later in highstand system tract. Reservoir properties of various facies units of the sandstones in the fan are described, in which the main channel and branched channel sands are recognized as perfect reservoirs in the fan. This study was based on comprehensive data including about 800m cores from 16 wells, 426 well-logging data, 220 km<sup>2</sup> 3-D seismic surveys and oil production data. Therefore, the recognition and deposition model of the Liangjialou fan are of significance in deep-water reservoir study in the rift lacustrine basins.