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# Sequence stratigraphy, sedimentary systems and implications for hydrocarbon exploration in the northern Xujiaweizi Fault Depression, Songliao Basin, NE China

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## Abstract

Recent drilling data from the northern Songliao Basin reveal considerable hydrocarbon exploration potential in deep-seated small-scale faulted basins. In this paper, the Shahezi Formation of the northern Xujiaweizi Fault Depression within the Songliao Basin was investigated as a case study. Sequence stratigraphy, sedimentary systems and the hydrocarbon exploration potential of the small-scale faulted basin were investigated through observations and descriptions of cores; analyses of conventional log curves, imaging data and logging data; and interpretations of 3-D seismic profiles. Four third-order sequences, mainly controlled by sediment supply and fault activity, were identified based on unconformities at the basin margins and in sedimentary successions. System tracts in the third-order sequences were also recognized through lithological associations and geophysical response characteristics. The distributions of sedimentary systems, including fan deltas, braided deltas, lacustrine deposits, subaqueous fans,

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