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## Progress and achievements of shale gas development in CNPC

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In past 5 years, CNPC has made great breakthrough of shale gas exploration and development in Sichuan Basin. Both proved reserves and production rate has been growing rapidly. This is achieved by the advance and innovation of technology and management.

a) Geology and geophysics technologies ensure the reliability of resource evaluation and production target. It is realized by acquiring, processing and interpreting geophysical data to obtain the stratigraphy correlation, sweet spot distribution, key geology & geomechanics factor determination.

b) Drilling and completion technologies provide the early return of the investment. CNPC has explored the best practice of integrated technology (including fast drilling, volume fracturing treatment), to obtain higher initial production rate (over  $6.4 \times 10^4$  m<sup>3</sup>/d per well in Changning and Weiyuan plays).

c) Reservoir engineering technology ensures the long-term sustained production. Gas well classification is developed to perform integrated management of numerous production wells; production performance evaluation is developed to estimate OGIP and EUR (average OGIP per well is  $1 \times 10^8$  m<sup>3</sup>, EUR is  $7.6 \times 10^7$  m<sup>3</sup>/d); fracturing parameter optimization is developed to enhance productivity and benefits.

By conducting these pilot research since 2012, CNPC has established complete technique series for the development of shale resource buried less than 3500m, and gained great confidence from accomplishing production from shale.

While CNPC has made great progress towards commercial production, low gas price and high investment are expected to be growing challenges in the way ahead for shale gas. CNPC would realize cost-effective production at low gas price by sustained improvement and innovation of technique.

## Biography

Yunsheng Wei began his professional career at RIPED in 2006, having abundant experience in unconventional gas development nearly 10 years. He has made great contributions to improving reservoir engineering, especially in tight gas and shale gas. He has published more than 25 papers in reputed journals and has been serving as an editorial board member of several gas engineering journals.

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