

## **Integrated Wellbore Technologies to Enhance the Rate of Penetration for Well Dingye 5**

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### **ABSTRACT**

In the Dingshan Block, gas wells faced low penetration rate and long drilling cycles during drilling. In order to improve the ROP (rate of penetration) and efficiency, integrated wellbore technologies were explored and put into practice to improve the rate of penetration. This technological model incorporated the following protocols: first, a single contractor should be employed to comprehensively manage and implement various professional technologies relevant to the wellbore project, and to target the poorly matched degree and incompatible technologies which occurred when contracted out to different contractors; secondly, several new technologies were implemented, which included single technologies such as pneumatic drilling, PDC bit selection and upgrading, ROP enhancement supporting, deviation controlling technology, drilling fluid technology, etc. All were researched and put into practice, with the goal of maximizing ROP and efficiency. The trial of the integrated wellbore technologies on Well Dingye 5 indicated that compared with nearby wells, Well Dingye 5 had the average ROP increased by 25% and the drilling cycle shortened by 41.95 d. Therefore, to enhance the ROP, integrated wellbore technologies should give full play to the advantages of single technology applications that complement each other. The outcome would be the enhancement of ROP and improved efficiency.