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Application of “CRUST-1” Continental Scientific Drilling Rig in CCSD-SK-2 Scientific Drilling Engineering

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CCSD-SK-2 Well is located in the northeast of China in the Songliao Basin, and is located in Daqing Oilfield which is the largest oil field in China. The scientific drilling wells mainly funded by the China Geological Survey Bureau, and also won the partially funded by the international Continental Scientific Drilling Program (ICDP). The purpose of the engineering is to obtain full core of Cretaceous formation in Songliao basin, and to build the time tunnel of Cretaceous greenhouse climate change, and to clarify the cause, process and results of the formation of Daqing oil field. CCSD-SK-2 Well designed drilling depth is 6400 m , whose drilling inclination is 90 °, whose continuous coring length is 3535 m (2865-6400m), whose recovery rate of core is greater than or equal 95, whose core diameter is greater than or equal 100 mm, whose geothermal gradient is 3.9 ° / 100 m.

“CRUST-1” Continental Scientific Drilling Rig is designated special drilling equipment for CCSD-SK-2 which is connected the equipment of the oil drilling equipment with advanced geological drilling technology. Research method used in this study is the transformation of mature technology, core technology independent research and development and key technology of integration. The equipment owns the more automatic and intelligent level. Drilling rig mainly includes: AC inverter driving mud pump, rotary table and winch; high speed hydraulic topdrive, automatic drill string discharge device, hydraulic intelligent iron roughneck and hydraulic automatic catwalk; intelligent automatic feed drilling equipment and monitoring instruments; efficient five mud treatment system such as. “CRUST-1” owns safe, reliable, efficient, energy-saving, comfortable as starting point, gradually moving to the future direction of development of the information technology, automation, intelligent deep continental scientific drilling. “CRUST-1” drilling ability is 10000 m, and the maximum hook load is 700 tons, and the total power is 4610 kw.

By the end of February 2016, “CRUST-1” have been completed the third section, when CCSD-SK-2’s drilling depth is 4542.24m, which has been implemented comprehensive drilling, coring drilling and reaming diameter drilling a total footage of 7300 m, and the rig operates smoothly and excellent performance.

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