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First Commercial Deployment of New Third Generation Rotary-Shouldered Connections Demonstrates Cost Savings

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Abstract

This paper describes this first commercial deployment of a third-generation double-shouldered, double-start, rotary-connection run on the Discoverer Deep Seas drill ship at Walker Ridge 678 in 7,016 feet of water. The 5-7/8 inch OD, 26.30 ppf, S-135, Range-2 drill string was used to drill the planned 28,000 feet vertical well. Lessons learned and future recommendations are presented.

New developments in drilling tubulars are rapidly evolving and represent enabling technologies for the industry's continued advancement of drilling deeper, further, and more cost-effective wells. The current trend to drill offshore in deeper waters, longer extended reach wells, and record setting ultra-deep wells continues. Some operators have wells of 40,000 to 45,000 TMD in the planning stages. In response to this need, the development of third generation, ultra-high torque connections were developed and released in 2006. These third generation double-shouldered connections are the industry's first family of connections designed to meet the specific and different needs of each pipe size. The thread form is a double-start thread that reduces the number of revolutions to assemble the connection by 50%. The thread form also provides a unique dual-radius thread root that offers a step-change improvement in fatigue resistance. The new connection provides increased mechanical and hydraulic performance compared to earlier high-performance connections while also providing fatigue performance greater than standard API connections.

These connections can facilitate more challenging wells, provide increased cost savings, and reduce risk during the well construction process. Conservative estimates suggest that the new connections will save approximately 7-1/2 hours in planned trip time for a 20,000 foot well.