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Drillers Benefit from Reservoir-to-flare-stack MPD

■ Expert drilling intelligence is now available in real time.

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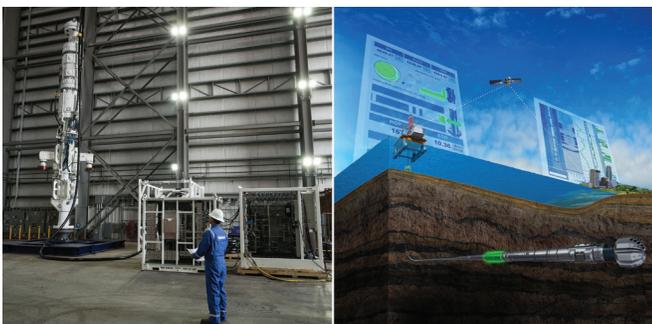
Two Schlumberger Spotlight on New Technology Award winners are delivering tangible value.

Operators and contractors planning to conduct a managed-pressure drilling (MPD) operation no longer need to rely on coordination of multiple entities throughout the phases of installation, commissioning and execution. An all-encompassing, all-original equipment manufacturer (OEM) MPD integrated system now exists that includes design, engineering, manufacturing, system integration, well engineering and onsite well delivery services from one supplier.

In addition, actionable drilling intelligence is now available in real time to improve drilling performance, reduce risk and manage borehole quality. The recently released OptiDrill real-time drilling intelligence service is enabling operators and drillers to receive remote expert advice to help mitigate risk and increase efficiency during drilling. The drilling intelligence service is offering early detection of ROP limiters and drilling hazards; drillers receive immediate guidance on how to mitigate severe downhole dynamics so that the bottomhole assembly (BHA) is protected and the bit run is extended.

Increasing MPD value

By using MPD in deep water, wells can be delivered in a safer, more economic manner. Efficiency gains are delivered through enablement of well monitoring (kicks, ballooning, losses, etc.) and controlling pressure at surface to accurately navigate the pressure profiles of the well. By effectively managing downhole pressure via applied surface backpressure, time and money is saved from eliminating the need to “weight up” or fight losses before drilling ahead. Additionally, well monitoring and pressure control is managed during tripping to minimize stuck-pipe events or surge and swab.



The Schlumberger integrated offering provides optimization of drilling and production operations. The MPD control system can be precisely scaled to customer needs or specific well demands per level of well complexity. It also features enhanced kick detection to automatically respond with the required choke control solution to reduce environmental impact. Operators can eliminate extra runs and improve well productivity as a result of reduced formation damage. The system significantly reduces nonproductive time resulting from mud losses and potential for stuck pipe events during drilling and tripping operations. Other benefits include lower total cost of ownership and a single point of contact with 100% accountability for all aspects of the system throughout the MPD operation.

The integrated riser joint and all surface equipment are controlled from one platform, allowing operators the flexibility to efficiently switch from conventional drilling to MPD applications or riser gas handling operations.

Quantifying risk, managing downhole conditions

It is important while drilling to detect whirl, bounce and stick/slip motions to preserve the life of the BHA, while progression of vibration type and amplitude helps to modify drilling parameters and minimize energy lost

(Left) Efficiencies gained from an all-encompassing MPD integrated system extend beyond system hardware to include full OEM support and advantages of a single-source supplier. (Right) Actionable, real-time drilling intelligence from the OptiDrill service gives operators extra foresight and expert advice to optimize their drilling operations. (Images courtesy of Schlumberger)

to vibrations. Also, quantifying weight and torque transfer allows early identification of abnormal downhole conditions.

To achieve these insights, the OptiDrill real-time drilling intelligence service mitigates drilling risk through a combination of downhole automated algorithms. The algorithms provide the operator with actionable information to continuously identify hazardous drilling events and trends as well as real-time guidelines for immediate action while drilling. The service also improves drilling performance, particularly in challenging environments, by advising on actions to eliminate destructive dynamics and providing safe operating parameters based on bit-rock interaction information acquired downhole.

To aid casing running, the service also detects microdogleg and spiraling using bending moment data, enabling evaluation of borehole stability over time. Remote interpretations are shared with the rigsite team to help identify optimal surface parameters. Automated quick event detection algorithms are able to indicate plugged bit nozzles and drill-string washout.

Full reservoir-to-flare-stack integration of MPD relieves much of the burden previously placed on operators and drilling contractors, while real-time expert intelligence helps drillers quantify risk and manage downhole conditions, both key to instituting increased technical efficiencies into a critical operation.

To learn more about these technologies, visit Schlumberger at booth 2415. ■